Appendices

THE REGULATORY ENVIRONMENT

The following pages contain brief summaries of the federal, state and local watershed management and resource policies that affect restoration and resource management in the Russian River watershed. This information is provided to ensure that all future actions are carried out in compliance with the appropriate regulatory authorities. Beginning on the following page, applicable regulatory information is organized in tables for each of the primary strategy areas that guided the *POA* development process. Specific policies that overlap between the primary strategy areas are repeated for each and policies that are implemented by more than one public agency appear multiple times within the table.

STRATEGY AREA I: FLUVIAL GEOMORPHOLOGY & HABITAT RESTORATION – PROTECTION	
Environmental Protection Agency (EPA)	▪ The **Clean Water Act (CWA)** mandates that projects impacting water quality, including activities related to the 10-year floodplain and beneficial uses within the "river system" receive certification under Section 401 and Section 404. The EPA delegates administrative responsibility for Section 404 (i.e., wetlands) and Section 403 of the CWA to regional agencies, such as the North Coast Regional Water Quality Control Board (NCRWQCB) - As part of the Clean Water Act (Section 303), agencies must determine a Total Maximum Daily Load (TMDL), which is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the waterbody can be used for the purposes the State has designated and to account for seasonal variation in water quality. ▪ All federal construction/maintenance projects or construction/maintenance projects with a federal nexus that affect the natural environment are required to obtain a Record of Decision upon completion of a **National Environmental Policy Act (NEPA) Review**.
Federal Energy Regulatory Commission (FERC)	▪ The Commission's legal authority is derived from the Federal Power Act of 1935, the **Natural Gas Act (NGA)** of 1938, the **Natural Gas Policy Act (NGPA)** of 1978, the **Public Utility Regulatory Policies Act** of 1978, and the **Energy Policy Act** of 1992. Consequently, FERC regulates the transmission and sales of natural gas, oil and electricity; licenses and inspects private, municipal and state hydroelectric projects; and, oversees environmental matters related to natural gas, oil, electricity and hydroelectric projects.
United States Army Corps of Engineers (USACE)	▪ As part of the **Clean Water Act (CWA)**, the USACE has authority over dredging and filling in the "waters of the United States," including wetlands. Projects that fall under the jurisdiction of the USACE must receive permits under Section 404 of this Act. ▪ All federal construction or maintenance projects that affect the natural environment are required to comply with the **National Environmental Policy Act (NEPA)** Review. Projects focusing on navigation, flood protection and ecosystem restoration are generally administered by USACE. ▪ As part of the **Rivers and Harbors Act (RHA)**, the USACE has authority over any work within a tidal or navigable waterway, including tidal wetland. Work may include activities such as, dredging, filling or the installation of structures. Any work in these waters must be permitted by the USACE, under Section 10 of RHA.

STRATEGY AREA I: FLUVIAL GEOMORPHOLOGY & HABITAT RESTORATION – PROTECTION (CONT.)	
Fish & Wildlife Service (USFWS) **National Marine Fisheries Service (NMFS)**	▪ The Fish and Wildlife Service, within the Department of the Interior, and the National Marine Fisheries Service, within the Department of Commerce, share responsibility for the administration of the **Endangered Species Act (ESA)**. As part of the ESA, projects that affect federally listed fish, bird, amphibian and plant species or their essential habitats must obtain an 1081 Permit - Incidental Take Statement (Section 7 Consultation) and complete a Coordination Act Report (CAR).
California Resources Agency	▪ State and local agencies are required by the **California Environmental Quality Act (CEQA)** to identify the significant environmental impacts of their projects and to avoid or mitigate those impacts, if feasible.
California Department of Fish and Game (DFG)	▪ The **California Endangered Species Act (CESA)** addresses rare, threatened or endangered amphibians, birds, fish, invertebrates, mammals, plants and reptiles. Projects affecting these species or their essential habitats should comply with Section 2080 of the Fish and Game Code prohibiting the take of endangered or threatened species. Additionally, these projects should complete Incidental Take Permit Applications (Fish and Game Code section 702 and 2081d) and should undergo mitigation planning to offset project caused losses of listed species populations and their essential habitat.
Tribal Policies	▪ Projects affecting federally recognized tribal lands must comply with the **Native American Graves Protection and Repatriation Act (NAGPRA)** and the **Archeological Resource Protection Act (ARPA)**. ▪ Projects that affect tribal lands should work with tribal governments to address issues of historic concern such as ceremonial grounds, burial grounds and traditional fishing and/or hunting areas. ▪ Projects on federally recognized tribal lands must meet additional tribal requirements specified in the Clean Air Act (CAA), Clean Water Act (CWA) and the Endangered Species Act (ESA).

STRATEGY AREA I: FLUVIAL GEOMORPHOLOGY & HABITAT RESTORATION – PROTECTION (CONT.)	
Sonoma County Permit and Resource Management Department	▪ In addition to the applicable federal and state regulations, projects in Sonoma County should follow relevant policies included in the County General Plan and the County Zoning Regulations. Currently, the majority of watershed restoration and resource management permits are contained in Section 6 of the 1989 General Plan (Resource Conservation Element).
Mendocino County Planning and Building Department	▪ In addition to the applicable federal and state regulations, projects within Mendocino County should follow relevant policies established by the Mendocino County Planning and Building Department. Potential permit categories include coastal, zoning and general plan, construction and building, sewage disposal, water provision, and use, movement or encroachment on county roads.

STRATEGY AREA II: WATER CONDITIONS & CHARACTERISTICS	
Environmental Protection Agency (EPA)	▪ The **Clean Water Act (CWA)** mandates that projects impacting water quality, including activities related to the 10-year floodplain and beneficial uses within the "river system" receive certification under Section 401 and Section 404. The EPA designates administrative responsibility for Section 404 (i.e., wetlands) and Section 403 of the CWA to regional agencies, such as the North Coast Regional Water Quality Control Board (NCRWQCB) - As part of the Clean Water Act (Section 303), agencies must determine a Total Maximum Daily Load (TMDL), which is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the waterbody can be used for the purposes the State has designated and to account for seasonal variation in water quality. ▪ All federal construction/maintenance projects or construction/maintenance projects with a federal nexus that affect the natural environment are required to obtain a Record of Decision upon completion of a **National Environmental Policy Act (NEPA) Review**.
Federal Energy Regulatory Commission (FERC)	▪ The Commission's legal authority is derived from the Federal Power Act of 1935, the **Natural Gas Act (NGA)** of 1938, the **Natural Gas Policy Act (NGPA)** of 1978, the **Public Utility Regulatory Policies Act** of 1978, and the **Energy Policy Act** of 1992. Consequently, FERC regulates the transmission and sales of natural gas, oil and electricity; licenses and inspects private, municipal and state hydroelectric projects; and, oversees environmental matters related to natural gas, oil, electricity and hydroelectric projects.
United States Army Corps of Engineers (USACE)	▪ As part of the **Clean Water Act (CWA)**, the USACE has authority over dredging and filling in the "waters of the United States," including wetlands. Projects that fall under the jurisdiction of the USACE must receive permits under Section 404 of this Act. ▪ All federal construction or maintenance projects that affect the natural environment are required to comply with the **National Environmental Policy Act (NEPA)** Review. Projects focusing on navigation, flood protection and ecosystem restoration are generally administered by USACE. ▪ As part of the **Rivers and Harbors Act (RHA)**, the USACE has authority over any work within a tidal or navigable waterway, including tidal wetland. Work may include activities such as, dredging, filling or the installation of structures. Any work in these waters must be permitted by the USACE, under Section 10 of RHA.

STRATEGY AREA II: WATER CONDITIONS & CHARACTERISTICS (CONT.)	
Fish and Wildlife Service (USFWS) **National Marine Fisheries Service (NMFS)**	▪ The Fish and Wildlife Service, within in the Department of the Interior, and the National Marine Fisheries Service, within in the Department of Commerce, share responsibility for the administration of the **Endangered Species Act (ESA)**. As part of the ESA, projects that affect federally listed fish, bird, amphibian and plant species or their essential habitats must obtain an 1081 Permit - Incidental Take Statement (Section 7 Consultation) and complete a Coordination Act Report (CAR).
California Resources Agency	▪ State and local agencies are required by the **California Environmental Quality Act (CEQA)** to identify the significant environmental impacts of their projects and to avoid or mitigate those impacts, if feasible.
California Department of Fish and Game (DFG)	▪ The **California Endangered Species Act (CESA)** addresses rare, threatened or endangered amphibians, birds, fish, invertebrates, mammals, plants and reptiles. Projects affecting these species or their essential habitats should comply with Section 2080 of the Fish and Game Code prohibiting the take of endangered or threatened species. Additionally, these projects should complete Incidental Take Permit Applications (Fish and Game Code section 702 and 2081d) and should undergo mitigation planning to offset project caused losses of listed species populations and their essential habitat.
California Coastal Commission (CCC)	▪ The **California Coastal Act** aims to protect California's 1100-mile coastline for current and future generations. To meet the Coastal Act policies, local governments must submit a Local Coastal Plan (LCP). After an LCP is approved, the Commission's coastal permitting authority is transferred to the local government.
State Water Resources Control Board (SWRCB)	▪ Projects that involve the use or generation of a hazardous substance or pollutant that is discharged into the water must create a Pollution Prevention Plan as outlined in Section 13263.3 of the **Clean Water Enforcement and Pollution Prevention Act of 1999** (SB709) and Amendments (SB 2165). ▪ The **Water Commission Act of 1913** dictates that a Priority-based Water Right Permit (Clean Water Code 1200) be obtained to address water rights.

STRATEGY AREA II: WATER CONDITIONS & CHARACTERISTICS (CONT.)	
North Coast Regional Water Quality Control Board (NCRWQCB)	▪ The North Coast Regional Water Quality Control Board is designated by the EPA as the entity to enforce and protect the water quality standards established by the **Clean Water Act (CWA)**. Projects affecting surface or ground water supplies must receive a certification based on Section 404 of the CWA. Additionally, agencies must determine a Total Maximum Daily Load (TMDL) and obtain a National Pollutant Discharge Elimination System (NPDES) permit from NCRWQCB. ▪ Any project that affects surface or groundwater must meet the waste discharge requirements as specified in the **Porter-Cologne Water Quality Control Act** (California Water Code, Division 7).
Tribal Policies	▪ Projects affecting federally recognized tribal lands must comply with the **Native American Graves Protection and Repatriation Act (NAGPRA)** and the **Archeological Resource Protection Act (ARPA)**. ▪ Projects that affect tribal lands should work with tribal governments to address issues of historic concern such as ceremonial grounds, burial grounds and traditional fishing and/or hunting areas. ▪ Projects on federally recognized tribal lands must meet additional tribal requirements specified in the Clean Air Act (CAA), Clean Water Act (CWA) and the Endangered Species Act (ESA).
Sonoma County Permit and Resource Management Department	▪ In addition to the applicable federal and state regulations, projects in Sonoma County should follow relevant policies included in the County General Plan and the County Zoning Regulations. Currently, the majority of watershed restoration and resource management permits are contained in Section 6 of the 1989 General Plan (Resource Conservation Element).
Mendocino County Planning and Building Department	▪ In addition to the applicable federal and state regulations, projects within Mendocino County should follow relevant policies established by the Mendocino County Planning and Building Department. Potential permit categories include coastal, zoning and general plan, construction and building, sewage disposal, water provision, and use, movement or encroachment on county roads.

STRATEGY AREA III: CONNECTIONS BETWEEN HUMAN ACTIVITY & HABITAT	
Environmental Protection Agency (EPA)	▪ As dictated by the **Clean Air Act (CAA)**, all projects that address air quality must comply with the National Ambient Air Quality Standards. ▪ The **Clean Water Act (CWA)** mandates that projects impacting water quality, including activities related to the 10-year floodplain and beneficial uses within the "river system" receive certification under Section 401 and Section 404. The EPA designates administrative responsibility for Section 404 (i.e., wetlands) and Section 403 of the CWA to regional agencies, such as the North Coast Regional Water Quality Control Board (NCRWQCB) - As part of the Clean Water Act (Section 303), agencies must determine a Total Maximum Daily Load (TMDL), which is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the waterbody can be used for the purposes the State has designated and to account for seasonal variation in water quality. ▪ All federal construction/maintenance projects or construction/maintenance projects with a federal nexus that affect the natural environment are required to obtain a Record of Decision upon completion of a **National Environmental Policy Act (NEPA) Review**.
Federal Energy Regulatory Commission (FERC)	▪ The Commission's legal authority is derived from the Federal Power Act of 1935, the **Natural Gas Act (NGA)** of 1938, the **Natural Gas Policy Act (NGPA)** of 1978, the **Public Utility Regulatory Policies Act** of 1978, and the **Energy Policy Act** of 1992. Consequently, FERC regulates the transmission and sales of natural gas, oil and electricity; licenses and inspects private, municipal and state hydroelectric projects; and, oversees environmental matters related to natural gas, oil, electricity and hydroelectric projects.
United States Army Corps of Engineers (USACE)	▪ As part of the **Clean Water Act (CWA)**, the USACE has authority over dredging and filling in the "waters of the United States," including wetlands. Projects that fall under the jurisdiction of the USACE must receive permits under Section 404 of this Act. ▪ All federal construction or maintenance projects that affect the natural environment are required to comply with the **National Environmental Policy Act (NEPA)** Review. Projects focusing on navigation, flood protection and ecosystem restoration are generally administered by USACE. ▪ As part of the **Rivers and Harbors Act (RHA)**, the USACE has authority over any work within a tidal or navigable waterway, including tidal wetland. Work may include activities such as, dredging, filling or the installation of structures. Any work in these waters must be permitted by the USACE, under Section 10 of RHA.

STRATEGY AREA III: CONNECTIONS BETWEEN HUMAN ACTIVITY & HABITAT (CONT.)	
Natural Resources Conservation Service (NRCS)	▪ All projects that potentially affect prime farmland are required to obtain a Farmland Conversion Impact Rating as mandated by the **Farmland Protection Policy Act**.
California Resources Agency	▪ State and local agencies are required by the **California Environmental Quality Act (CEQA)** to identify the significant environmental impacts of their projects and to avoid or mitigate those impacts, if feasible.
California Coastal Commission (CCC)	▪ The **California Coastal Act** aims to protect California's 1100-mile coastline for current and future generations. To meet the Coastal Act policies, local governments must submit a Local Coastal Plan (LCP). After an LCP is approved, the Commission's coastal permitting authority is transferred to the local government.
California Department of Forestry and Fire Protection	▪ To protect and enhance the State's unique forest and wildland resources, projects in forested and wildland areas must comply with the **Forest Practice Act and Rules** (Code II Title 14 CCR Chapters 4, 4.5 and 10) by developing a Timber Harvest Plan. ▪ The **Z'Berg-Nejedly Forest Practice Act** is intended to assure the continuous growing and harvesting of commercial forest tree species and to protect the soil, air, fish and wildlife and water resources. Projects that include timber operations are required by this Act to develop a Timber Harvest Plan prepared by a registered professional forester. ▪ In addition to the above-mentioned acts, projects must meet site-specific fire codes.
State Water Resources Control Board (SWRCB)	▪ Projects that involve the use or generation of a hazardous substance or pollutant that is discharged into the water must create a Pollution Prevention Plan as outlined in Section 13263.3 of the **Clean Water Enforcement and Pollution Prevention Act of 1999** (SB709) and Amendments (SB 2165). ▪ The **Water Commission Act of 1913** dictates that a Priority-based Water Right Permit (Clean Water Code 1200) be obtained to address water rights.

STRATEGY AREA III: CONNECTIONS BETWEEN HUMAN ACTIVITY & HABITAT (CONT.)	
North Coast Regional Water Quality Control Board (NCRWQCB)	▪ The North Coast Regional Water Quality Control Board is designated by the EPA as the entity to enforce and protect the water quality standards established by the **Clean Water Act (CWA)**. Projects affecting surface or ground water supplies must receive a certification based on Section 404 of the CWA. Additionally, agencies must determine a Total Maximum Daily Load (TMDL) and obtain a National Pollutant Discharge Elimination System (NPDES) permit from NCRWQCB. ▪ Any project that affects surface or groundwater must meet the waste discharge requirements as specified in the **Porter-Cologne Water Quality Control Act** (California Water Code, Division 7).
Tribal Policies	▪ Projects affecting federally recognized tribal lands must comply with the **Native American Graves Protection and Repatriation Act (NAGPRA)** and the **Archeological Resource Protection Act (ARPA)**. ▪ Projects that affect tribal lands should work with tribal governments to address issues of historic concern such as ceremonial grounds, burial grounds and traditional fishing and/or hunting areas. ▪ Projects on federally recognized tribal lands must meet additional tribal requirements specified in the Clean Air Act (CAA), Clean Water Act (CWA) and the Endangered Species Act (ESA).
Sonoma County Permit and Resource Management Department	▪ In addition to the applicable federal and state regulations, projects in Sonoma County should follow relevant policies included in the County General Plan and the County Zoning Regulations. Currently, the majority of watershed restoration and resource management permits are contained in Section 6 of the 1989 General Plan (Resource Conservation Element).
Mendocino County Planning and Building Department	▪ In addition to the applicable federal and state regulations, projects within Mendocino County should follow relevant policies established by the Mendocino County Planning and Building Department. Potential permit categories include coastal, zoning and general plan, construction and building, sewage disposal, water provision, and use, movement or encroachment on county roads.

IDENTIFIED DATA & TECHNICAL STUDY NEEDS

This appendix presents information about the types of data and technical studies required to further develop and implement the potential actions included in Chapter 4. Agency representatives and technical experts helped to identify the data and technical study needs below.

Identified Data or Technical Study Need	***Relevant Potential Action***
Ortho-photos of entire basin (database)	All potential actions
Salmon population studies (year-by-year for multiple streams)	All potential actions
Current imagery data (especially Mendocino County)	All potential actions
Current land use data	All LU potential actions
County zoning classifications (GIS layer)	All LU potential actions
Timber growth, potential yield and harvest data	LU2
Sonoma County soils data	LU3
Public access data	LU4
Photo points to track restoration progress (GIS data)	SC1
All known variable and inputs for stream corridor restoration modeling	SC1
Engineering studies of bank stabilization approaches	SC1
Inventory of existing corridor encroachments	SC1
Consolidated multi-agency, multi-group restoration projects data (GIS layer)	SC1
Level of shade canopy calculations	SC2
Channel incision modeling	SC2, SC1, SH2
Valuable natural resources (GIS layer)	SC2, SC3, UR5, LU4, RA2
Inventory of open space, parks and undeveloped land areas	SC2, SC3, UR5, LU4, RA2

Identified Data or Technical Study Need	***Relevant Potential Action***
Vegetation cover data (GIS layers)	SC2, SC5, LU2
Stream flow pattern data	SC2, SH2, SH4, WS1, WS2, WS3, LU6, PE3
Gravel data (e.g., types and size classes, sources, and methods of extraction and transport, and related economic benefits)	SC4
Estuary data	SH1, SH2, WS1
Roads data	SH1, UR3, WS3, LU1, LU2
Road assessment data	SH1, UR3, WS3, LU1, LU2
Natural and human-induced bank erosion data (GIS layer)	SH1, UR3, WS3, WQ5, WQ6, LU1, LU2, LU3, LU6, DC3
Studies of potential retention, recharge and infiltration sites	SH4, UR3, WS2, WS3, LU3
Engineering studies of construction methods for off-channel infiltration and detention ponds	SH4, UR3, WS2, WS3, LU3
Valuable upland habitat data	UR5
Water quality studies (including temperature)	WQ1, WQ2, WQ3, WQ6
Additional sub-basin assessment data	WQ3
Water availability data	WS1
Water rights data	WS1, PE3
Known aquifers (GIS layer)	WS1, PE3
Changes in subsurface flows studies	WS1, SH4, PE3
Engineering studies about linkages between groundwater and subterranean and surface flows	WS1, SH4, PE3

POA STRATEGY AREA MAPS

Throughout the *POA* planning process, information about current activities, projects and programs in the watershed was collected and mapped for each of the strategy areas that guided the development of potential actions. The maps on the following pages illustrate some of the efforts undertaken by resource agencies and managers, environmental and stewardship groups, sub-watershed councils, Mendocino and Sonoma Counties, cities, and special districts in the watershed during 2002.

Information about the activity, project or program, including name, participating entities or organizations and general locations, was obtained using Current Activity, Project and Program Profile forms (see Chapter 5). The forms were distributed at meetings of the Steering Committee, caucuses and Agency Partners only and, therefore, the maps in this appendix do not represent a complete inventory of activities, projects and programs existing in the watershed.

DETAILED POTENTIAL ACTIONS (IDEAS AND RESOURCES)

This appendix is a "work in progress" and will be updated based on subsequent reviews and future editing of the *POA*. The objective of this appendix is to provide an organizing structure for obtaining the information necessary to further develop and prioritize the potential actions identified in Chapter 4 of this living document. The ideas and resources contained in this appendix were obtained through discussions with agency representatives and each of the RRWC caucuses.

During a preliminary prioritization exercise conducted at the September 14, 2002 RRWC meeting, RRWC members were asked to identify a subset of the Chapter 4 potential actions for the consultant team to provide preliminary implementation details. These potential actions were reviewed and discussed by agency representatives. As a result, technical input regarding possible tasks, potential partners, related activities, projects and programs, and relevant references for each potential action was obtained. In the course of obtaining this information, detail was presented for other potential actions besides those prioritized by the RRWC. This appendix also includes the preliminary implementation details for these additional potential actions.

The primary strategy areas and appropriate strategies organize this chapter and the numbering of the potential actions in this appendix corresponds with the numbering used in Chapter 4. In addition, related actions from the complete list of potential actions in Chapter 4 have been highlighted to identify overlap between the different strategies. The potential actions identified by the RRWC during the preliminary prioritization exercise are noted below with the following icon: 

STRATEGY AREA I: FLUVIAL GEOMORPHOLOGY AND HABITAT RESTORATION–PROTECTION

Strategy I-A: Stream Corridor Restoration

Potential Action SC1: Restore the stream corridor through a variety of stream corridor protection and watershed management methods (e.g., meander corridor setbacks, floodplain and wetland protection, and riparian revegetation).

Tasks may or may not include:

A. Develop a bibliography of existing materials, case studies and models of restoration activities, projects and programs.

B. Review and support recommendations and actions in existing best management (BMPs) and fish enhancement plans such as the *Russian River Basin Fisheries Restoration Plan – Review Draft* (DFG).

C. Obtain input from private property owners about their issues and barriers to implementing existing BMPs and continue to work directly with private property owners throughout development processes

D. Update current stream corridor restoration models to ensure technical models are comprehensive. Incorporate all variables (e.g., solar radiation) to promote restoration decisions that are based on all known inputs and energy balances.

E. Use all available information, such as the recovery goals being developed for National Marine Fisheries Service's Recovery Planning Process for West Coast Salmon, to develop standardized criteria for identifying successful and effective restoration activities, projects and programs. Consider the following as potential criteria for determining appropriate practices/measures:

- Stream flow patterns,
- Appropriate locations for levees or offset levees,
- Flooding impacts related to bank hardening and dams,
- Recreational access to public land areas,
- Fish passage, bridge and culvert impacts on velocity, stability, flow and fish passage,
- Reach specific techniques,
- Adjacent land values, and
- Landowner participation and community involvement.

F. Investigate engineering options that may sustain a relatively natural form and function for the river and tributaries in spite of the current sediment budget deficit present in the watershed (e.g. grade control structures near the mouths of tributaries incorporating necessary fish passage structures).

G. Model the extent of channel incision resulting from flow and sediment imbalances in both the mainstem and its tributaries. Use this information to determine the efficacy of historic remediations and the level of active stream bank erosion that may be advisable to restore fluvial geomorphic balance.

H. Use information collected from above tasks to identify highly successful and effective measures (e.g., native plant methods and bioremediation projects) for voluntary and mandatory implementation in areas where natural and human-induced erosion must be minimized or controlled.

I. Identify projects that typically use bank hardening techniques and work with state and federal agencies to develop alternative analyses for soft approaches and incentives during permitting.

J. Inventory existing corridor encroachments and evaluate opportunities for incremental restoration.

K. Monitor restoration effectiveness utilizing protocols being developed DFG.

Rationale (Issues Addressed)

The identification and development of stream corridor protection and watershed-wide management methods such as riparian vegetation enhancements, setbacks or wetland reforestation may directly address the critical issues affecting the stream corridor such as loss of riparian vegetation and beyond beneficial bank erosion and sedimentation. Several approaches ranging from nonintervention to substantial intervention for managed recovery exist; however, the main objective of Potential Action SC1 is to identify and develop methods that halt degradation before it occurs and enable continuous, unassisted ecosystem recovery (The Federal Interagency Stream Restoration Work Group 1998).

Potential Partners

USACE, NMFS, NRCS, SCC, NCRWQCB SCWA, MCIWPC, MCRRFC&WCID, Mendocino County Farm Bureau, Sonoma County Farm Bureau, UCCE, HREC, RCDs, Russian River Property Owners Association, RRWC

Related Activities, Projects and Programs

Recovery Planning Process for West Coast Salmon (NMFS), Navarro Sediment and Temperature TMDL (NCRWQCB), Russian River Enhancement Plan – Draft (SCC)

Relevant References

California Salmonid Stream Habitat Restoration Manual (DFG), Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), Effectiveness Monitoring Protocols for Restoration (DFG, UCB, Humboldt State University), Russian River Section 7 Consultation (SCWA, USACE, NMFS, MCRRFC&WCID), Stream Corridor Restoration: Principles, Processes, and Practices, (The Federal Interagency Stream Restoration Work Group), Ground Bioengineering for Slope Protection and Erosion Control (Schiechtl and Stern), Culvert Inventory and Fish Passage Evaluation of the Humboldt County Road System (Taylor)

Related Potential Action(s)

SC1, SC2, SC3, SC4, SC5, UR4, UR6, WQ3, LU3, DC4, DC10

Potential Action SC2: Seek an appropriate balance for riparian vegetative cover throughout the watershed.

Tasks may or may not include:

A. Develop a bibliography of existing materials, case studies and models regarding riparian vegetation cover (i.e., types, function, methods for calculating appropriate levels, enhancement strategies, etc.)

B. Use existing information to determine appropriate methods for calculating level of shade canopy necessary for improving structure and function of corridor.

C. Use existing GIS data, such as RRGIS data, to assess the current state of riparian vegetative cover throughout the watershed.

D. Develop a process or "roadmap" that includes specific criteria to help agencies, resource managers, sub-watershed councils and landowners determine and achieve minimum level of shade canopy necessary.

Rationale (Issues Addressed)

The current heavily vegetated mainstem corridor may reflect an artifact resulting from regulated flows while tributary corridors may by artificially sparse as a result of water withdrawals. Other riparian forests have been lost due to dropping water tables resulting from channel incision in the mainstem and its tributaries. Riparian vegetation cover enhancements in appropriate locations may reverse the decline in shade canopy and, consequently, halt rising water temperatures. In addition, riparian vegetation along stream corridors and tributaries may help to stabilize banks, reduce sedimentation and restore the structure and function of the stream corridor (CRP, SCWA 1998).

Potential Partners

USACE, DFG, CDF, CRP, NMFS, SCWA, RCDs, NASA, WCB, local land trusts

Related Activities, Projects and Programs

Conservation Reserve Enhancement Program (FSA), Timber Harvest Activity Map (CDF), Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD)

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), California Salmonid Habitat Restoration Manual (DFG), Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD), RRGIS (NMFS, CRP), RRIIS (CRP, HREC, MIG), KRIS (Kier Associates, SCWA)

Related Potential Action(s)

SC1, SC3, SC5, DC4, DC8, DC10

Potential Action SC3: Work with organizations that can hold conservation easements to develop standard easement definitions and evaluation protocols for establishing riparian habitat and corridors in sensitive areas.

Tasks may or may not include:

A. Develop a bibliography of existing materials, case studies and models of conservation easements and, specifically, information about identifying appropriate locations, funding mechanisms, implementation protocols and collaborative strategies.

B. Compile a list of national and local organizations that can hold conservation easements within Sonoma and Mendocino Counties.

C. Work with County planning departments, Sonoma County Agricultural Preservation and Open Space District, land trust organizations and property owners to identify existing protocols and evaluate the effectiveness of these protocols.

D. Initiate a collaborate process and develop standard easement definitions and evaluation protocols for establishing riparian habitat and corridors in sensitive areas.

E. Use information collected from tasks above to develop recommendations for improvements at the County level.

Rationale (Issues Addressed)

A conservation easement, or a deed restriction applied to a land area voluntarily by the owner, serves to protect resources such as productive agricultural land, ground and surface water, and habitat. Conservation easements are flexible; they may cover an entire parcel or portions of a property and they limit specific activities dependent on the needs of the landowner. Standard easement definitions and evaluation protocols may enhance landowner understanding of conservation easements, increase implementation of easements on private properties, and maximize the benefits for watershed resources. Increasing the amount of protected land in the watershed may minimize disturbances to the stream channel and riparian vegetation.

Potential Partners

USACE, EPA, NRCS, Resources Agency, DFG, Department. of Conservation, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, Sonoma County Agricultural Preservation and Open Space District, Mendocino County Farm Bureau, Sonoma County Farm Bureau, FishNet 4C, Cities, Land Trust Alliance, The Nature Conservancy, Greenbelt Alliance, local land trusts, RRWC

Related Activities, Projects and Programs

Not available

Relevant References

Not available

Related Potential Action(s)

SC1, SC2, SC3, SC4, UR4, UR5, LU3, DC8

Potential Action SC4: Determine the feasibility and need for a basin-wide and reach-specific gravel budget that is based on stream hydrology and identifies the gravel recruitment needs for healthy fisheries.

Tasks may or may not include:

A. Review the two Counties' aggregate resource management plans to identify opportunities for achieving a coordinated analysis of gravel extraction and supply.

B. Collect data regarding different gravel types and size classes, sources, and methods of extraction and transport to better understand the related economic benefits.

C. Evaluate the amount of gravel lost due to retention behind in-stream dams.

D. Identify reaches where natural bank erosion needs to occur to help maintain natural gravel recruitment for the river system and methods, such as meander corridor setbacks, easements, or direct acquisitions, for sustaining these sites and related river functions.

E. Use information to determine if extraction impacts the physical structure and function of the river and its tributaries, the recovery of salmonid species, or the regional/local economy.

F. Work with industries dependent on gravel extraction to investigate potential cost-effective alternatives to river-mined gravel.

Rationale (Issues Addressed)

A basin-wide gravel budget may improve understanding about gravel supplies in the watershed and the environmental costs (i.e., disturbances to the stream channel, loss of riparian vegetation, and excessive band erosion and sedimentation) versus the economic benefits associated with extraction (NMFS 1996). The goal of a basin-wide gravel budget is to achieve sustainable mining and minimize watershed-wide impacts. Any such gravel budget should account for sediment losses due to retention behind on-stream dams.

Potential Partners

USGS, NMFS, CGS, DFG, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, FishNet 4C, RRWC

Related Activities, Projects and Programs

Mad River Case Study (Humboldt County Community Development Services)

Relevant References

Mendocino Aggregate Resource Management Plan, Sonoma County Aggregate Resource Management Plan, Gravel Extraction Plan – draft in preparation (NMFS), Russian River Section 7 Consultation (SCWA, USACE, NMFS, MCRRFC&WCID)

Related Potential Action(s)

SH1

Potential Action SC5: Create a toolbox of non-toxic removal and replacement methods for exotic species that can be easily disseminated for application by private property owners, stewardship groups, resource agencies, and local municipalities.

Tasks may or may not include:

A. Review available resources and materials to identify and evaluate non-toxic plant removal methods and identify methods and indigenous species for appropriate replacement.

B. Use publications and current efforts by Circuit Rider Productions, Inc. (CRP) and Hopland Research and Extension Center (HREC) as models for identifying types, sources and locations of exotic species as well as strategies for removing harmful, invasive species.

C. List specific exotic species to be removed due to their potential threat to riparian vegetation.

D. Use existing vegetation maps to illustrate the geographic location of exotic plant infestations.

E. Assess the extent of potential impact (positive or negative) for each exotic plant type found within the watershed.

F. Identify additional data needed to develop site-specific or project level actions for exotic plant removal.

Rationale (Issues Addressed)

The removal of exotic species may improve the form and function of the stream corridor resulting from a loss of riparian vegetation, rising water temperatures, disturbances to the stream channel and excessive bank erosion and sedimentation. Exotic species, particularly those identified as invasive, may eradicate native vegetation and prevent re-growth, increase

fire danger and usurp large amounts of water. In addition, exotic vegetation does not provide the same habitat values for many species compared to native vegetation in riparian areas (CRP, SCWA 1998).

Potential Partners

NRCS, County Agricultural Commissioners, RCDs, UCCE, HREC, CRP, California Native Plant Society

Related Activities, Projects and Programs

Giant Reed Assessment, Mapping, Research and Removal (CRP, DFG, SCWA), Weed Abatement Program (Sonoma and Mendocino Counties), The Pierce's Disease/Riparian Habitat Workgroup

Relevant References

California Salmonid Stream Habitat Restoration Manual (DFG), Riparian Vegetation Management for Pierce's Disease in North Coast California Vineyards (The Pierce's Disease/Riparian Habitat Workgroup), The House and Garden Audit: Protecting Your Family's Health and Improving the Environment Audit: Protecting Your Family's Health and Improving the Environment (Laurel Marcus, Sotoyome RCD), RRGIS (NMFS, CRP)

Related Potential Action(s)

SC1, SC2

Strategy I-B: Species and Habitat Restoration

Potential Action SH1: Collaborate with property owners, agencies and educational institutions to establish appropriate watershed-wide control of unnatural erosion through run-off protocols, better management practices and activities that promote water resource sustainability (e.g., groundwater recharge).

Tasks may or may not include:

A. Identify no-net run-off or reduction strategies including BMPs that include educational, management and regulatory measures.

B. Work together to develop alternative strategies for improving topsoil conditions in cultivated areas and subsoil water infiltration near riparian areas.

C. Encourage activities that reduce the impact of impermeable surfaces and increase opportunities for groundwater recharge.

D. Support incentive-based programs that encourage property owner participation and minimize accelerated run-off.

E. Identify and remediate sources or mechanisms for sediment delivery.

Rationale (Issues Addressed)

Widespread adoption of better management practices on privately owned land may help to proactively reduce run-off, erosion and the potential for flash flood flows in streams and tributaries. Run-off, erosion and floods contribute to the sedimentation of spawning gravels and filling of pools and estuaries used by steelhead, coho and chinook (NMFS 1996).

Potential Partners

NRCS, NCRWQCB, RCDs, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, RRWC

Related Activities, Projects and Programs

Fish and Game Fisheries Restoration Grants Program, 319H and 205J Grants Program (EPA), EQIP (NRCS), Wetland Reserve Program (NRCS), Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD)

Relevant References

Handbook for Forest and Ranch Roads (Weaver, Hagans), California Salmonid Stream Habitat Restoration Manual (DFG), Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD), Electronic Field Office Technical Guide (NRCS), Soil Quality Institute (NRCS), County Grading Ordinances

Related Potential Action(s)

SH5, UR1, UR3, UR4, WS3, WQ3, WQ5, WQ6, LU1, LU2, LU3, LU6, PE1, DC3

Potential Action SH2: Identify and recommend practices that manage flow for economic and ecological benefits and establish a flow regime that is appropriate for listed species and the sustainability of natural habitat in both the mainstem and tributaries.

Tasks may or may not include:

A. Review findings from the Section 7 Consultation process and compile additional data developed by resource agencies (e.g., DFG, DWR and NMFS).

B. Support an ecological study of estuaries to improve understanding regarding estuary function and potential role in flow management.

C. Apply NMFS policy development efforts regarding flow requirements.

D. Participate in the Russian River Coho Salmon Recovery Program.

E. Use all available information to determine appropriate seasonal flows and high impact areas for the implementation of flow management practices.

Rationale (Issues Addressed)

Regulated flows in the mainstem and tributaries has led to channel incision, channelization, diminished gravel recruitment, riparian encroachment and habitat simplification. As a result, salmonid rearing habitat has decreased due to high summer flows and increased velocities that make pool stratification impossible (Steiner Environmental Consulting 1996). Instream flow management that considers salmonid needs and life cycles may help to sustain fisheries and beneficial uses within the watershed.

Potential Partners

USACE, NMFS, DWR, DFG, CCC, NCRWQCB, SCWA, MCRRFC&WCID, RRWC, Trout Unlimited, Pacific Coast Federation of Fishermen's Associations, Bodega Marine Lab, Russian River Coho Salmon Recovery Workgroup

Related Activities, Projects and Programs

Recovery Planning Process for West Coast Salmon (NMFS), Russian River Coho Salmon Recovery Program (Russian River Coho Salmon Recovery Workgroup)

Relevant References

Russian River Section 7 Consultation (SCWA, USACE, NMFS, MCRRFC&WCID), Guidelines for Maintaining Instream Flows to Protect Fisheries Resources Downstream of Water Diversions in Mid-California Streams (DFG, NMFS)

Related Potential Action(s)

SC2, SC4, WS1, WS2, WS3, LU6, PE3

Potential Action SH4: Analyze impact of river and stream modifications and water withdrawals on subterranean water flows to enhance groundwater and underground systems that maintain functional if not ideal flows for listed species.

Tasks may or may not include:

A. Determine role of rivers as part of the subsurface water system and vice versa.

B. Identify changes in subsurface flows and possible factors causing such changes.

C. Determine how channel modifications may impact the interconnection between groundwater and subterranean and surface flows.

D. Use information collected from tasks above and additional engineering studies to develop recommendations for improving surface and subsurface flows.

Rationale (Issues Addressed)

A stream channel can function as a recharge (stream loses water) or discharge (stream gains water) area depending on the elevation of the groundwater along the stream corridor. Groundwater elevation can vary significantly over short distances along the stream corridor based on subsurface characteristics (The Federal Interagency Stream Corridor Restoration Working Group 1998). Therefore, eliminating stream channel disturbances may help to minimize changes in the distances and connections between groundwater supplies and subterranean and river/stream flows.

Potential Partners

USGS, USACE, DWR, CGS, SCWA, MCRRFC&WCID

Related Activities, Projects and Programs

Not available

Relevant References

Stream Corridor Restoration: Principles, Processes, and Practices (The Federal Interagency Stream Corridor Restoration Working Group)

Related Potential Action(s)

SC2, SC4, SH2, WS1, WS2

Strategy I-C: Uplands Restoration

Potential Action UR1: Examine grading and erosion control ordinances to ensure that they reduce sedimentation and other hydrological impacts.

Tasks may or may not include:

A. Develop a list of BMPs and case studies of efforts in other counties that effectively reduce erosion, run-off and sedimentation throughout the watershed.

B. Review BMPs and provide input into the current grading erosion ordinance guidelines submitted to the Mendocino County Planning Commission.

C. Participate in efforts to develop a grading ordinance in Sonoma County.

Rationale (Issues Addressed)

Grading and erosion control standards supported by comprehensive ordinances may minimize sediment impacts to anadromous streams (Harris, Kocher, Kull 2001). An effective grading and erosion control ordinance would emphasize erosion control rather than sediment control. Such an ordinance could be applied to minimize winter grading, regulate land conversions, urbanization, development and land use practices, and maximize soil permeability.

Potential Partners

NRCS, NCRWQCB, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, FishNet 4C, RCDs, RRWC

Related Activities, Projects and Programs

Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD), Napa River Watershed Task Force (see Appendix VI)

Relevant References

Draft Mendocino Grading Ordinance, Sonoma Grading Permit, Napa County Grading Ordinance, Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD), Electronic Field Office Technical Guide (NRCS)

Related Potential Action(s)

SH1, SH5, UR3, UR4, WS3, WQ3, WQ5, WQ6, LU1, LU2, LU3, LU6, DC3, DC7

Potential Action UR2: Use vegetation management techniques to preserve natural vegetation, reduce invasive species, and benefit the watershed.

Tasks may or may not include:

A. Compile existing studies and case studies regarding innovative vegetation management approaches and methods for identifying appropriate conditions (e.g., flora and fauna) and locations (e.g., upland areas) for prescribed burning.

B. Work with property owners and local community groups to learn about vegetation management techniques used in upland areas throughout the watershed to identify successful practices and projects for potential implementation in other areas of the watershed.

C. Review vegetation management techniques such as prescribed burning, shaded fuelbreak and ground mulch included in CDF's Vegetation Management Plan and application process.

D. Review CDF's unit plans for Mendocino and Sonoma County to identify high hazard areas, actions (e.g., prescribed burning, intensive inspection program, shaded fuelbreak, etc.) recommended and rationale provided. Use information to also identify areas designated as lower priority areas for CDF action and support community led vegetation management planning processes to implement specific vegetation management tools based on the wildland conditions, proximity to residential homes and businesses, and resources (i.e., labor and tools) available within in the community.

E. Ensure collaboration between CDF and the community to assist homeowner associations and community groups apply for federal grants, such as the Wildland Urban Interface Grant and Community Fire Defense Grant, and obtain tools (e.g., brush cutters and chippers, saws, disposal sites, etc.) necessary for implementing different vegetation management techniques.

Rationale (Issues Addressed)

The benefits of various vegetation management techniques may help to alleviate negative impacts associated with land conversions, specific land use practices and reductions in soil permeability. Identifying the appropriate vegetation management tools based on specific land conditions and interconnections within the ecosystem may help to simulate old-growth forests, sustain long-term health of upland woodlands, enhance wildlife habitat, increase water yield, and reduce fire impacts on residences.

Potential Partners

USACE, CDF, local fire districts, CCC, homeowner associations, property owners

Related Activities, Projects and Programs

Wildfire Management Fuelbreak (Lake Sonoma Ranch Estate Homeowners Association, USACE, Geyserville Fire District)

Relevant References

Fire and Fire Surrogate Treatments for Ecosystem Restoration (UCB), Overall Unit Fire Plan (CDF), Vegetation Management Program EIR (CDF)

Related Potential Action(s)

SC1, SC2

Potential Action UR3: Investigate upland groundwater recharge and infiltration opportunities to reduce excessive run-off, improve soil infiltration and increase water-holding capacity in the watershed.

Tasks may or may not include:

A. Conduct a complete inventory of current efforts in upland areas, case studies, and existing BMPs intended to reduce run-off and discharge, such as use of permeable paving materials for local road construction and maintenance, and identify potential results for each approach. Consider a range of approaches including regulatory, educational and management measures.

B. Work with property owners and local community groups to learn about recharge and infiltration techniques used in upland areas throughout the watershed to identify successful practices and projects for potential implementation in other areas of the watershed.

C. Develop standardized criteria for identifying successful and effective recharge and infiltration techniques.

D. Use compiled information and criteria to identify highly successful and effective techniques or develop additional strategies for improving topsoil conditions in cultivated areas and subsoil water infiltration near riparian areas.

E. Collaborate with property owners to apply experimental methods in upland demonstration areas for educational purposes and, specifically, to test new methods and engage in two-way learning opportunities.

F. Encourage activities that enhance opportunities for groundwater recharge and reduce the impact of impermeable surfaces such as erosion and potential opportunities for flash flooding in the stream and its tributaries.

G. Promote implementation of on-site infiltration techniques through a campaign that provides public information about individual water responsibilities and low impact development strategies.

H. Support incentive-based programs to encourage property owner participation and minimize discharge.

Rationale (Issues Addressed)

Potential Action UR5 was developed to minimize erosion and run-off resulting from many of the activities, practices and impacts identified as critical issues in upland areas including urbanization and infrastructure development, impacts from overgrazing, decreased soil permeability, and pesticide run-off impacts. The rationale behind this potential action is reduce run-off and discharge where it starts. The goal is to work together toward no-new-net run-off/discharge approaches.

Potential Partners

NRCS, NCRWQCB, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, RCDs, RRWC

Related Activities, Projects and Programs

Fisheries Restoration Grants Program (DFG), 319H and 205J Grants Program (EPA), Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD)

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), Handbook for Forest and Ranch Roads (Weaver, Hagans), California Salmonid Stream Habitat Restoration Manual (DFG), County Grading Ordinances, Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD)

Related Potential Action(s)

SH1, SH5, UR1, UR4, WS3, WQ3, WQ6, WQ5, LU1, LU2, LU3, LU6, DC3

Potential Action UR4: Assess the effectiveness of the Sonoma County Vineyard Erosion and Sediment Control Ordinance (also known as the "hillside ordinance") to determine if the ordinance promotes or reduces hillside erosion and run-off and meets the RRWC mission and goals.

Tasks may or may not include:

A. Evaluate the watershed-wide benefits and impacts associated with the current ordinance in Sonoma County to identify pros/cons and potential improvements.

B. Identify and evaluate existing BMPs and adaptive management opportunities regarding (e.g., crop cover, structural and non-structural plans, setbacks, etc.) for potential incorporation into the hillside vineyard ordinance.

C. Establish a task force to evaluate and provide recommendations to develop a new ordinance on a watershed scale.

D. Use information from tasks above to support the development of a hillside vineyard ordinance in Mendocino County. Identify no-net run-off or reduction strategies that include educational, management and regulatory measures.

Rationale (Issues Addressed)

The Sonoma County Vineyard Erosion and Sediment Control Ordinance requires agricultural setbacks of 25-50 feet from streams and does not allow clearing of native vegetation within setback width (Harris, Kocher, Kull 2001). The ordinance does allow

clearing and planting on all slopes under 50 percent. Assessing the effectiveness of the ordinance may help to identify the current status of soil permeability, run-off and erosion as well as the impact of agriculture and pesticide use within the watershed.

Potential Partners

NRCS, NCRWQCB, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, Sonoma County Agricultural Commissioner's Office, FishNet 4C, RCDs, RRWC

Related Activities, Projects and Programs

Napa County Grading Ordinance, Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD)

Relevant References

Handbook for Forest and Ranch Roads (Weaver, Hagans), Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD), Electronic Field Office Technical Guide (NRCS)

Related Potential Action(s)

SH1, SH5, UR1, UR5, WS3, WQ3, WQ5, WQ6, LU1, LU2, LU3, LU6, DC3

Potential Action UR5: Establish continuous habitat corridors, where appropriate, to enhance migration corridors and minimize fragmentation.

Tasks may or may not include:

A. Review resource management goals developed by HREC, other research centers and resource agencies for oak woodland restoration.

B. Map upland resources, migration corridors and fragmentation areas utilizing GIS.

C. Use recovery goals being developed by National Marine Fisheries Service and other wildlife/fishery organizations for potential evaluation criteria.

D. Use information above to identify upland areas that provide valuable habitat (e.g., oak woodlands, meadows, and forests) and model to determine appropriate protection and restoration measures.

E. Review DFG's Effectiveness Monitoring Protocol being developed with UCB and Humboldt State University for implementation throughout the watershed.

Rationale (Issues Addressed)

Protecting and restoring open space, movement corridors for flora and fauna, diverse vegetative communities and rare habitat in upland areas may help to promote connectivity throughout the watershed. Connectivity facilitates the flow of energy, materials and species between critical ecosystems in the watershed and, as a result, aids the recovery and sustainability of the stream corridor and habitat (The Federal Interagency Stream Restoration Work Group 1998).

Potential Partners

USACE, NMFS, DFG, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, Sonoma County Agricultural Preservation and Open Space District, UCB, Humboldt State, HREC, CRP, RCDs, RRWC, International Union for Conservation of Nature and Natural Resources, Worldwide Wildlife Fund, Sierra Club, Trout Unlimited, The Nature Conservancy

Related Activities, Projects and Programs

Recovery Planning Process for West Coast Salmon (NMFS), EQIP (NRCS), WHIP (NRCS)

Relevant References

Effectiveness Monitoring Protocol (DFG, UCB, Humboldt State University), RRGIS (NMFS, CRP)

Related Potential Action(s)

SC2, SC3, UR5, SH3, DC4, DC8

STRATEGY AREA II: WATER CONDITIONS AND CHARACTERISTICS

Strategy II-A: Water Supply, Quantity and Storage

Potential Action WS1: Establish water budgets for the Russian River watershed and its sub-basins.

Tasks may or may not include:

A. Develop a bibliography of existing materials, case studies and models regarding water budgets.

B. Define the purpose and scope of a water budget based on model case studies and other research (e.g., Butte County, New York City and Colorado).

C. Develop a formal list of questions that the water budget model needs to answer and types of data needed.

D. Tailor models in other watersheds and sub-watersheds to address the specific questions, needs and conditions identified in the Russian River watershed.

E. Invite all agencies involved in water supply issues to present information about diversion, transfer, and conservation activities for the development of a usable water budget.

F. Work directly with appropriate agencies to help collect relevant data and encourage the deployment of gauges and monitoring equipment in streams, tributaries, wells and groundwater supplies.

G. Map and size known aquifers throughout the watershed.

H. Use information to develop a seasonal or monthly (dry and wet year) model water budget for potential implementation in the watershed.

I. Ensure a model water budget includes comprehensive and continual monitoring systems to identify trends over time and wet and dry season characteristics.

Rationale (Issues Addressed)

The conceptual diagram on the following page illustrates the different elements and interconnections that may be examined in the development of a water budget. An accurate water budget that is well defined and continuously managed throughout the watershed, including its sub-watersheds, may enhance understanding about the relationship between water quantity and flow and allow resource management and restoration actions to be comprehensively evaluated for implementation.

Potential Partners

USACE, USGS, NMFS, DFG, DWR, NCRWQCB, SCWA, Sonoma County Permit and Resource Management, MCWA, RRWC, Eel/Russian River Commission, Mendocino County Inland Power and Water

Related Activities, Projects and Programs

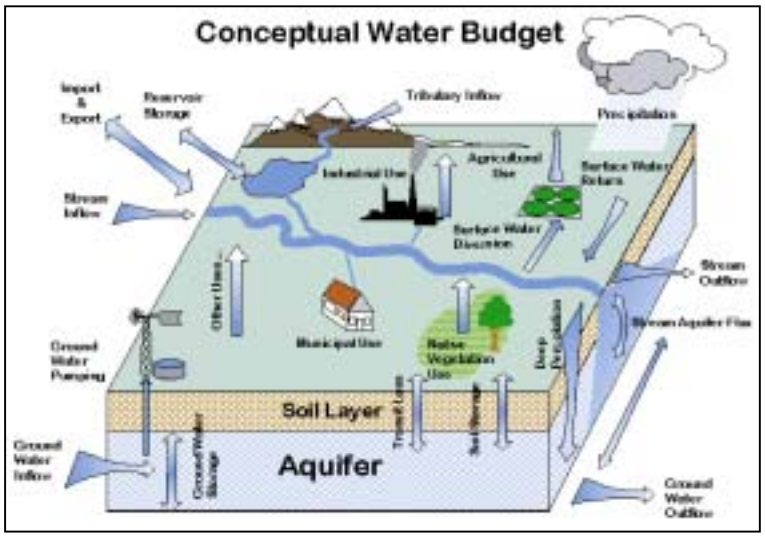
FERC Review of the Potter Valley Project Amendment

Relevant References

Section 7 Consultation, FERC re-licensing, Guidelines for Maintaining Instream Flows to Protect Fisheries Resources Downstream of Water Diversions in Mid-California Streams – June 12, 2002 (DFG and NMFS Joint Policy), Russian River Estuary Management Plan (SCWA)

Related Potential Action(s)

SH1, SH2, WS2, PE3, DC9



This diagram illustrates a conceptual water budget developed by the Colorado Division of Water Resources, Office of the State Engineer.

Potential Action WS2: Evaluate reports and studies regarding dam operations and maintenance projects to determine the watershed-wide impacts of agency activities and potential alternatives (e.g., low and pulse flow mechanisms, new pipelines, inflatable dams and infiltration ponds).

Tasks may or may not include:

A. Review findings of Section 7 Consultation process and Biological Opinion to evaluate and support high priority restoration actions.

B. Review findings of pending USACE reconnaissance and feasibility studies related to the raising of Coyote Valley Dam and provide input during agency/public review periods.

C. Provide input about agencies' project objectives (e.g., the raising of Coyote Valley Dam) and timelines to ensure implementation produces timely and desired results.

D. Review and support mitigations such as habitat enhancement, acquisition, and bypasses during project planning processes.

E. Determine the feasibility of alternative or flexible approaches for increasing water storage capacity. Consider the following approaches:

- Raising Coyote Valley Dam;
- Building pipelines from reservoirs to users, including those upstream;
- Recharging aquifers;

- Implementing local projects, such as inflatable dams, infiltration ponds, off-stream storage and above-ground cisterns;
- Withholding water in reservoirs during dry seasons or low flows (i.e., after growing season, before winter rain)

Rationale (Issues Addressed)

Dams block access to upstream habitat for anadromous species in the watershed and prohibit downstream movement of sediment that results in a further decrease of habitat availability and rising water temperatures (Steiner Environmental Consulting 1996). SCWA and USACE both operate and maintain dam and water diversion facilities in the watershed, including Warm Springs and Coyote Dams. In addition, both agencies conduct other water-related activities such as flood control, water diversion and storage, hydroelectric power generation, and fish production and passage. USACE and SCWA, signed a Memorandum of Understanding (MOU) with NMFS establishing a framework for the consultation and conference required by the ESA to determine the related impacts of their activities on anadromous species in the Russian River. The Biological Assessments and Opinion resulting from the Section 7 Consultation process, along with other findings from additional studies, may improve knowledge of water quantity, flow and diversion impacts on the watershed and promote consensus regarding watershed-wide water supply strategies among various agencies.

Potential Partners

USACE, SCWA, NMFS, MCRRFC&WCID

Related Activities, Projects and Programs

Russian River Section 7 Consultation (SCWA, USACE, NMFS, MCRRFC&WCID), Lake Mendocino Fishway Bypass Proposal (Steiner Environmental Consulting)

Relevant References

Factors for Decline: A Supplement to the Notice of Determination for West Coast Steelhead under the Endangered Species Act (NMFS), Russian River Section 7 Consultation (SCWA, USACE, NMFS, MCRRFC&WCID), Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), A History of the Salmonid Decline in the Russian River (Steiner Environmental Consulting)

Related Potential Action(s)

SH2, SH4, WS1, PE3

Potential Action WS3: Identify and evaluate potential recharge and retention sites for opportunities to store excess flows.

Tasks may or may not include:

A. Develop a list of existing materials, case studies and models regarding recharge and retention opportunities.

B. Develop standardized criteria for identifying successful and effective structural and non-structural techniques for potential implementation.

C. Use all available information and criteria to identify highly successful and effective recharge and retention techniques (e.g., use of permeable materials for local road construction and maintenance).

D. Work with property owners to identify and map sites within the watershed where water recharge or retention may benefit groundwater systems and instream flows.

E. Use information collected from tasks above and additional engineering studies to determine the feasibility and impact of constructing off-channel infiltration and detention ponds to provide stream water flow when and where appropriate for native species recovery.

F. Identify the environmental impacts and operational and management responsibilities associated with each potential technique including construction of ponds.

G. Encourage activities that reduce the impact of impermeable surface and enhance groundwater recharge.

Rationale (Issues Addressed)

Recharge and retention sites may help to minimize the extent of run-off and resulting erosion in the watershed. Off-channel infiltration and detention ponds, where appropriate, can provide a mechanism for retaining excess water flow and recharging groundwater supplies. Potential benefits of such mechanisms may include maintained minimum flows and enhanced fish passage and migration.

Potential Partners

NRCS, NCRWQCB, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, RCDs, RRWC

Related Activities, Projects and Programs

Fisheries Restoration Grants Program (DFG), 319H and 205J Grants Program (EPA), Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD)

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), Handbook for Forest and Ranch Roads (Weaver, Hagans), California Salmonid Stream Habitat Restoration Manual (DFG), County Grading Ordinances, Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD)

Related Potential Action(s)

SH1, SH5, UR1, UR3, UR4, WQ3, WQ5, WQ6, LU1, LU2, LU3, LU6, DC3

Potential Action WS5: Support and promote consumer and business incentives that promote water conservation.

Tasks may or may not include:

A. Identify and evaluate existing information, approaches and resources regarding water conservation incentives.

B. Use available information to develop incentives that are feasible and appropriate for implementation

C. Work with consumers and business representatives to develop outreach strategies and implement incentives in the community.

Rationale (Issues Addressed)

Incentives offered to consumers and local businesses may help promote proactive measures to conserve water in homes, stores and offices. An incentives campaign to promote and implement water conservation measures may also increase public awareness regarding water supply and demand, rights and responsibilities.

Potential Partners

DWR, SCWA, MCIWPC, RCDs, RRWC, local Chamber of Commerces

Related Activities, Projects and Programs

Fish Friendly Farming Program (Laurel Marcus and Associates, Sotoyome RCD), SCWA Conservation Programs, Agriculture wastewater re-use.

Relevant References

The House and Garden Audit: Protecting Your Family's Health and Improving the Environment Audit: Protecting Your Family's Health and Improving the Environment (Laurel Marcus, Sotoyome RCD), Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD)

Related Potential Action(s)

SA2, PE3, PE5, PE7

Strategy II-B: Water Quality

Potential Action WQ1: Explore a wide range of methods and feasibility for treating and reusing wastewater in the watershed.

Tasks may or may not include:

A. Conduct a quantitative and qualitative assessment of wastewater and run-off requirements included in new development plans and land use regulations.

B. Determine methods and impacts of delivering wastewater to redwood and poplar groves for bioremediation and reuse.

C. Explore alternatives for diverting urine from the waste stream for beneficial purposes (e.g., plant watering).

D. Assess feasibility of using household grey water in topsoil for home or decorative plantings.

E. Work with property owners to develop and evaluate methods for delivering usable wastewater to appropriate agricultural uses.

F. Use information collected from tasks above to develop recommendations for improving reuse/reclamation strategies at the County level. Encourage specific wastewater regulations that consider the rural or urban character of the land and future population growth and ensure regulations are implemented equally throughout the entire watershed.

Rationale (Issues Addressed)

Treated wastewater may carry pollutants that can end up in the river or streams and impact overall water quality and native species in the watershed. Potential Action WQ 4 seeks to identify and evaluate innovative and cost-effective mechanisms for the further treatment of secondary wastewater. Full treatment of wastewater increases opportunities to reuse wastewater for a range of beneficial uses and keeps watershed resources in the watershed.

Potential Partners

USACE, DWR, NCRWQCB, SCWA, MCIWPC, Cities, sub-watershed groups, RRWC

Related Activities, Projects and Programs

Not available

Relevant References

Not available

Related Potential Action(s)

WS1, WS4, WQ4, SA2

Potential Action WQ2: Increase citizen and property owner involvement in the long-term monitoring of water quality.

Tasks may or may not include:

A. Support and promote watershed-wide participation in water quality assessment workshops for property owners.

B. Encourage widespread adoption of better management practices that benefit native species in streams and tributaries.

B. Work with NCRWQCB to implement the First Flush Event within the Russian River watershed.

C. Provide data collection assistance during the first significant run-off event of the wet season to allow NCRWQCB to interpret data and prioritize actions.

D. Use monitoring results and outcomes to increase awareness about water quality, nutrients, conductivity and turbidity impacts resulting from run-off, erosion and the transport of sediment. Consider the Neuse River Monitoring Project in North Carolina as a model for reporting and disseminating data “live” via the Internet.

E. Use water quality data to promote implementation of BMPs, restoration projects and the TMDL process.

F. Review the Mendocino County and UCCE project designed to assist TMDL planning and implementation.

Rationale (Issues Addressed)

Increased citizen involvement in the monitoring of water quality allows data to be collected from diverse locations throughout the watershed and over long periods of time. Working with agency staff and water quality experts may help to ensure that the data collected by citizens is reliable and useful for determining types and sources of pollutants. In addition, enhancing citizen understanding about water quality in their community may promote voluntary application of better management practices.

Potential Partners

NCRWQCB, MCWA, County Agricultural Commissioners, City of Santa Rosa, UCCE, RRWC

Related Activities, Projects and Programs

Laguna de Santa Rosa Feasibility Study (USACE), Pesticide Management Program (USDA), RCD Stewardship Programs, Neuse River Monitoring Project (University of North Carolina)

Relevant References

Water Quality Monitoring Technical Guide Book (Oregon Watershed Enhancement Board), City of Santa Rosa Stormwater Plan and Monitoring Program, The House and Garden Audit: Protecting Your Family's Health and Improving the Environment Audit: Protecting Your Family's Health and Improving the Environment (Laurel Marcus, Sotoyome RCD)

Related Potential Action(s)

WQ6, SA1, SA2, PE3, PE5, PE7, DC5

Potential Action WQ3: Identify, map and support efforts at the sub-basin level to reduce impacts including, but not limited to, sedimentation, runoff, dissolved oxygen, and high water temperature.

Tasks may or may not include:

A. Use completed stream and watershed assessments to obtain information about efforts at the sub-basin level.

B. Continue and coordinate watershed assessments to obtain comprehensive information about the watershed and identify priority projects for implementation at the sub-basin level.

C. Review assessment results and existing BMPs to develop recommendations for water quality improvements at the sub-basin level.

D. Recommend and develop projects at the reach or parcel scale.

Rationale (Issues Addressed)

Due to the varying geology, climate, vegetation, fish species distribution and land use practices, this potential action focuses on the sub-basins and recognizes that better management practices have been applied throughout the watershed to minimize the impacts associated with sedimentation, run-off, contaminated surface flows, treated wastewater and other seasonal discharges. Identifying and mapping these efforts may provide a

comprehensive view of overall water quality and the interconnections between different tributaries and the mainstem.

Potential Partners

NCRWQCB, RCDs, HREC, sub-watershed groups, RRWC

Related Activities, Projects and Programs

RCD Watershed Assessments (e.g., Dooley, Tomki and Forsythe Creeks), DFG Stream Assessments

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), GIS Basin Planning and Mapping (DFG), RRGIS (NMFS, CRP), Russian River Basin Plan (NCRWQCB), Oregon Watershed Assessment Manual (Oregon Watershed Enhancement Board)

Related Potential Action(s)

SC5, SH1

Potential Action WQ6: Collaborate with agency staff and County representatives (e.g., County personnel, citizen, economic environmental and other groups) to identify model erosion control and bank stabilization ordinances, programs and practices that lead to improved water quality.

Tasks may or may not include:

A. Support the development and implementation of erosion control ordinances in both Mendocino and Sonoma County.

B. Develop a list of existing BMPs, including bank stabilization techniques, designed to minimize erosion and sedimentation impacts on water quality and identify potential results associated with each.

C. Develop bilingual educational materials about BMPs.

D. Disseminate information about appropriate and effective BMPs and adaptive management practices throughout the community and support incorporation into County ordinances.

E. Promote exemptions in County ordinances for restoration projects that are publicly funded when the benefits outweigh the adverse risks.

F. Encourage private landowners to implement alternative conditioning projects during permitting.

Rationale (Issues Addressed)

Potential Action WQ2 recognizes the direct linkages between land use activities, stream channel function and water quality. Identifying model erosion control and bank stabilization approaches may help to provide a range of effective measures for reducing the water quality impacts associated with sedimentation, runoff and discharge.

Potential Partners

USACE, NRCS, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, FishNet 4C, RCDs, RRWC

Related Activities, Projects and Programs

Napa River Watershed Task Force (see Appendix VI)

Relevant References

Handbook for Forest and Ranch Roads (Weaver, Hagans), Russian River Basin Fisheries Restoration Plan – Review Draft (DFG)

Related Potential Action(s)

SH1, SH5, UR1, UR3, UR4, WS3, WQ3, WQ5, LU1, LU2, LU3, LU6, PE1, DC3

STRATEGY AREA III: CONNECTIONS BETWEEN HUMAN ACTIVITY AND HABITAT

Strategy III-A: Land Use, Development and Management

Potential Action LU1: Support and encourage fish-friendly programs and maintenance plans to ensure that roads and culverts do not contribute to significant soil erosion and sedimentation in the watershed nor restrict fish and wildlife passage.

Tasks may or may not include:

A. Review road and infrastructure assessment protocols to ensure resulting recommendations are based on a standardized set of minimum qualifications that can be applied throughout the watershed and evaluated periodically.

B. Support a coordinated effort among state and federal agencies currently developing new standards to decrease the number and types of fish barriers.

C. Encourage both Counties to adopt criteria developed by state and federal agencies.

D. Identify alternative construction methods that use material mixtures consisting of permeable cement or other porous materials and larger culverts.

E. Develop a certification and renewal process for road construction and grading operators requiring a comprehensive understanding of fish friendly BMPs, road impacts on ecosystems and their inhabitants.

F. Assist the Counties and municipalities to update existing handbooks and ensure that recommended practices are current and innovative (e.g., recommendations regarding culvert size and replacement). Use the San Mateo County Watershed Protection Program's Performance Standards for Road Maintenance developed by San Mateo County Public Works as a model.

G. Educate the community and private property owners about fish friendly road design characteristics and function to ensure appropriate road use (e.g., slower speeds on unpaved roads) and proper construction and maintenance of dips, ditches and slopes.

H. Provide materials and expand opportunities for private property owners to conduct road assessments.

Rationale (Issues Addressed)

NMFS, DFG and FishNet 4C have identified several negative impacts associated with road and culvert construction and maintenance in the watershed including fish barriers and increased sedimentation. The focus of this potential action is to use the data and recommendations that have been developed to implement fish friendly practices and improve road and culvert construction and maintenance at the County level.

Potential Partners

USACE, NMFS, DFG, CDF, SCC, Caltrans, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, FishNet 4C, RCDs, municipal public works and transportation departments, RRWC

Related Activities, Projects and Programs

Fisheries Restoration Grants Program (DFG), RFP, County Road Maintenance Manual for Northwestern California Watersheds: A Water Quality and Stream Habitat Protection Guide – Draft 2002 (5 Counties Salmon Restoration Program), Fish Passage Forum (NMFS, USFS, DFG, SCC, FishNet 4C)

Relevant References

California Salmonid Stream Habitat Restoration Manual (DFG), Handbook for Forest and Ranch Roads (Weaver, Hagans), Effects of County Land Use Policies and Management Practices on Anadromous Salmonids and their Habitats. Final report prepared for the FishNet 4C program of Sonoma, Marin, San Mateo, Santa Cruz and Monterey Counties (Harris, Kocher, Kull), San Mateo County Watershed Protection Program's Performance Standards for Road Maintenance (San Mateo County Department of Public Works)

Related Potential Action(s)

SH1, SH5, UR1, UR3, WS3, WQ3, WQ6, LU2, LU3, DC3, DC4

Potential Action LU2: Improve forest management practices to protect stream conditions and promote soil retention.

Tasks may or may not include:

A. Review the CDF Timber Harvest Plan (THP) rules, Non-industrial Timber Management Plan (NTMP) guidelines, and Timber Conversion rules.

B. Develop a list of BMPs and identify potential results associated with each.

C. Identify and map County zoning classifications, locations of different timber types, age-classes and changes over time to better understand watershed-wide resources.

D. Review timber growth, potential yield and harvest data for the watershed and determine the range of economic uses for each timber type and age-class to better understand the related economic benefits.

E. Use information collected from tasks above to promote existing protocols (e.g., road decommissioning) for minimizing watershed-wide impacts in forested areas before and after logging occurs.

F. Train landowners to implement BMPs and protocols developed to enhance forest management practices.

Rationale (Issues Addressed)

This potential action addresses the negative impacts associated with logging and forestry practices such as regional landscape changes and increased soil-erosion and run-off.

Potential Partners

NMFS, DFG, CDF, NCRWQCB, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, FishNet 4C, UCB, Humboldt State University, HREC, RRWC, Forest Stewardship Council, SmartWood

Related Activities, Projects and Programs

Timber Harvest Activity Map (CDF)

Relevant References

THP Guidelines (CDF), NTMP Guidelines (CDF), Timber Conversion Rules (CDF), RRGIS (NMFS, CRP), California Salmonid Stream Habitat Restoration Manual (DFG), Handbook for Forest and Ranch Roads (Weaver, Hagans)

Related Potential Action(s)

SC5, SH1, UR2, LU1, PE3

Potential Action LU3: Review and recommend improvements to city and county building requirements including sediment and erosion controls.

Tasks may or may not include:

A. Develop a list of existing materials, case studies and models from other counties regarding setback ordinances, slope specifications, bioremediation opportunities, and BMPs.

B. Review the effectiveness of the RCD strategy regarding allowable impacts along stream corridors.

C. Collaborate to develop standardized criteria for identifying successful and effective BMPs, ordinances and regulations.

C. Identify successful and effective BMPs and model ordinances/regulations for compilation in a better practices guidebook to promote regulatory improvements and landowner education.

D. Use all available information and criteria to determine the feasibility and potential benefit of implementing a range or gradient of "impact acceptability zones". Consider "zones" that include appropriate setback or easement widths based on the specific land use or activity, a stream's meander belt characteristics, and other existing site conditions. For example, a) no activity or development allowed in zone 0-25 feet along stream, b) trails and tractor turn-outs allowed in zone 25-50 feet along stream, c) agriculture and grazing allowed in zone 75+ feet along stream.

Rationale (Issues Addressed)

Setback ordinances provide green or open spaces that minimize disturbances to the stream corridor and riparian habitat. Depending on the width of the setback, natural bioremediation processes may occur and help to improve water quality and supplies. Similarly, slope specifications may help to reduce the amount and velocity of run-off, which would increase opportunities for natural processes such as infiltration to occur and reduce the extent of erosion on hillsides.

Potential Partners

USACE, EPA, NRCS, Resources Agency, DFG, Department. of Conservation, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, Sonoma County Agricultural Preservation and Open Space District, Mendocino County Farm Bureau, Sonoma County Farm Bureau, FishNet 4C, Cities, Land Trust Alliance, The Nature Conservancy, Greenbelt Alliance, local land trusts, RRWC

Related Activities, Projects and Programs

Napa River Watershed Task Force (see Appendix VI)

Relevant References

Draft Mendocino Grading Ordinance, Sonoma Grading Permit, Napa County Grading Ordinance, Fish Friendly Farming – Farm Assessment and Conservation Plan Workbook (Laurel Marcus and Associates, Sotoyome RCD), Electronic Field Office Technical Guide (NRCS)

Related Potential Action(s)

SH1, SH5, UR1, UR4, UR3, WS3, WQ3, WQ6, WQ5, LU1, LU2, LU4, LU6, LU7, RA2, DC3

Potential Action LU4: Establish watershed priorities and promote policy recommendations to protect sensitive land areas.

Tasks may or may not include:

A. Review DFG's *Russian River Fisheries Restoration Plan* for watershed restoration priorities.

B. Identify significant natural resources within the watershed and related sustainability opportunities.

C. Create a watershed-wide inventory of different open space, parks and undeveloped land areas.

D. Use land use data and maps compiled by the Sonoma County Open Space District, DFG, land trusts and others to create data overlays that can be applied to mapped areas of sensitive and critical habitat, wetlands, and riparian zones, watershed-wide.

E. Develop "protection" criteria based on comprehensive analyses of existing open space, wetland, riparian and habitat information.

F. Develop approaches or methods for the reuse of a land area or water supply based on the extent of existing development and natural resource requirements.

G. Consider a range of reuse opportunities that allow for recreational, educational or stewardship activities and identify where protection measures or development is appropriate.

H. Encourage the development of publicly managed parks along the river to minimize impacts of uncontrolled public access (e.g., trash in river, trampled vegetation, and disruptions to wildlife) and support community clean-up activities.

I. Recommend a "tool box" approach to the Mendocino and Sonoma County Board of Supervisors for the implementation of practices designed to protect sensitive and viable resource areas in existing open spaces, state and local parks, habitat corridors, and wastewater disposal areas.

Rationale (Issues Addressed)

Private property is often obtained by public entities when the value of the land has significantly decreased due to prior uses of the land. This limits the reuse potential of the land for public benefit yet allowing the land to remain unused is not a viable option either. Potential Action LU4 seeks to place specific protections on valuable land now so that potential reuse for public benefit is a viable option.

Potential Partners

USACE, EPA, NRCS, Resources Agency, DFG, Dept. of Conservation, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, Sonoma County Agricultural Preservation and Open Space District, Mendocino County Farm Bureau, Sonoma County Farm Bureau, FishNet 4C, cities, Land Trust Alliance, The Nature Conservancy, Greenbelt Alliance, local land trusts, RRWC

Related Activities, Projects and Programs

Reuse of Wilson's Grove (Windsor), Conservation Reserve Enhancement Program (FSA)

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG), RRGIS (NMFS, CRP)

Related Potential Action(s)

SC2, SC3, SH3, UR5, LU3, LU7, RA2, DC4, DC8, DC10

Potential Action LU6: Monitor and encourage the implementation of land use and development programs to address stormwater discharges.

Tasks may or may not include:

A. Identify and analyze range of policies intended to address stormwater discharge.

B. Develop a list of existing BMPs designed to minimize stormwater discharge impacts on watersheds and identify potential results associated with each.

C. Ensure program development is coordinated with the NCRWQCB's Phase II Stormwater Implementation Regulations and TMDL process as well as Air Quality Control Board (AQCB) policies to promote comprehensive policy improvements.

Rationale (Issues Addressed)

Stormwater discharge directly increases with the amount of natural vegetation that is covered by impermeable surfaces in an area. During heavy rainfalls, a stream's annual flow may be delivered as stormwater run-off rather than baseflow. In addition, less flow is available for recharge in areas with impermeable surfaces due to increased volumes of run-off. The result is reduced baseflow levels during periods without rainfall (The Federal Interagency Stream Restoration Work Group 1998). Therefore, stormwater must be addressed during land use and development planning processes.

Potential Partners

EPA, ARB, NCRWQCB, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, RCDs, municipal public works and transportation departments, RRWC

Related Activities, Projects and Programs

TMDL (NCRWQCB), NPDES (NCRWQCB)

Relevant References

Phase II Stormwater Implementation Regulations (NCRWQCB), City of Santa Rosa Stormwater Management Plan (SCWA, County of Sonoma, City of Santa Rosa), Start at the Source - Residential Site Planning and Design Guidance Manual for Stormwater Quality Protection (Bay Area Stormwater Management Agencies Association)

Related Potential Action(s)

UR1, UR3, WS3, WQ6, WQ5

Strategy III-B: Regulatory Accountability and Action

Potential Action RA1: Encourage learning opportunities such as informational workshops involving agencies, landowners, community and steward groups and sub-watershed councils.

Tasks may or may not include:

A. Provide forums to share success stories and innovations inside and outside of the Russian River watershed.

B. Support BMPs and educational programs offered by agencies to preclude regulatory action.

Rationale (Issues Addressed)

The focus of this potential action is to increase access to information about watershed management approaches, restoration practices and new innovations that currently exist. The implementation of this action highlights the informational resources and experts available from within the watershed. Providing forums and opportunities for learning and dialogue may promote information sharing, multi-way learning, and collaborations that would benefit the watershed.

Potential Partners

NRCS, NCRWQCB, SCC, Mendocino County, Sonoma County, RCDs, RRWC, sub-watershed groups

Related Activities, Projects and Programs

Sonoma County Blue Circle (UCCE, FishNet 4C, West County Watersheds Network, 4SOS)

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG)

Related Potential Action(s)

SA1, SA2, PE3, PE9

Potential Action RA2: Coordinate and develop protocols for identifying standard habitat and wetland protections to be used during land use planning and development decisions. The same protocols may apply across counties, municipalities, and special districts.

Tasks may or may not include:

A. Establish a citizen advisory board that would provide on-going input at County Planning Commission and Board of Supervisors' meetings for the implementation and use of habitat/wetland protection protocols.

B. Outline the differing roles and responsibilities between Counties, cities and special districts regarding environmental protection and development.

C. Develop a list of existing materials, case studies and models regarding habitat and wetland protections used during land use and development planning processes.

D. Develop standardized criteria for identifying successful and effective restoration activities, projects and programs.

E. Use all available information and criteria to identify highly successful and effective protection protocols for implementation during planning processes.

Rationale (Issues Addressed)

Development and land use protocols that do not extend beyond the scope of development and land use may not consider the value of specific natural resources within an ecosystem. Developing protection protocols may help to ensure valuable resources such as habitat and wetlands are protected during development and land use planning processes. However, site-specific protection measures only may have little value in an ecosystem such as a watershed and, therefore, protocols should be standardized to assist implementation throughout the watershed.

Potential Partners

USACE, EPA, NRCS, Resources Agency, DFG, Department. of Conservation, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, Sonoma County Agricultural Preservation and Open Space District, MCRRFC&WCID, SCWA, Mendocino County Farm Bureau, Sonoma County Farm Bureau, FishNet 4C, cities, Land Trust Alliance, The Nature Conservancy, Greenbelt Alliance, local land trusts, RRWC

Related Activities, Projects and Programs

Not available

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG),

Related Potential Action(s)

LU3, LU7, DC4, DC8, DC10

Potential Action RA3: Adapt and/or develop informational and outreach materials about existing regulations, permitting processes, land use development decisions, and appropriate contacts at all levels of government for distribution to agencies and the public.

Tasks may or may not include:

A. Disseminate contact information for regulatory and permitting offices at all levels of government to agencies and the public.

B. Adapt and/or develop informational and outreach materials about existing land use and development regulations that are user-friendly, understandable and accessible for the general public.

C. Identify policies and procedures that directly apply to property owners and their Counties and cities (e.g., land use, agriculture, wetlands, water quality, mining, etc.).

D. Consider developing a campaign using materials created to promote community awareness and understanding about why regulations exist and enhance understanding about the personal benefits and watershed-wide impacts of specific regulatory interventions.

Rationale (Issues Addressed)

Due to increasing population growth and development, land use and resource management policies have proliferated among many jurisdictions and entities. As a result permitting processes and ensuring compliance has become difficult. This potential action seeks to enhance understanding among citizens and also between regulatory agencies to ensure accurate and meaningful information is easily accessible. The goal is to prevent the fines or penalties and preclude additional regulatory actions in the community through enhanced awareness and understanding about existing laws and regulations.

Potential Partners

USACE, EPA, NCRWQCB, SCC, Mendocino County Planning and Building, Sonoma County Permit and Resource Management, cities, RRWC, League of Women Voters

Related Activities, Projects and Programs

Not available

Relevant References

Guide to Watershed Project Permitting (CARCD)

Related Potential Action(s)

SH1, WQ6, SA2

Strategy III-C: Stewardship Activities

Potential Action SA1: Provide stewardship training opportunities where needed at the sub-watershed level.

Tasks may or may not include:

A. Consider the stewardship activities of sub-watershed groups as potential topics for training programs and educational curricula.

B. Use existing models for establishing a network of sub-watershed groups to assist with the development, implementation and staffing of training opportunities.

C. Use the RRIIS to promote and track training opportunities and support network of sub-watershed councils.

Rationale (Issues Addressed)

Stewards provide direct care and services that help restore the health of the watershed and its resources. Their efforts may be hindered if they cannot access the appropriate information to do the job and, as a result, the entire watershed may suffer. Providing stewards with the appropriate training and resources would enable citizens and stakeholders to participate in restoration projects, focus their efforts on the most critical watershed issues (e.g., need for additional on-site pollution and sediment prevention measures), and minimize duplicative or counterproductive activities in the watershed.

Potential Partners

NRCS, NMFS, EPA, NCRWQCB, RCDs, UCCE, Occidental Arts and Ecology Center, Dutch Bill Creek Watershed Group, other sub-watershed groups, RRWC

Related Activities, Projects and Programs

UCCE Workshops, RCD Stewardship Programs

Relevant References

RRIIS (CRP, HREC, MIG)

Related Potential Action(s)

UR6, RA1, PE3, PE5, DC6

Potential Action SA2: Foster partnerships between federal and state agencies, the RRWC and local community organizations to optimize available resources.

Tasks may or may not include:

A. Develop a process by which RRWC members share ideas and resources to promote stewardship activities throughout the watershed.

B. Support collaborations between agency staff and private property areas to establish demonstration projects and test new approaches (e.g., fencing and alternative sediment prevention practices for potential implementation watershed-wide).

C. Use the Bear Creek Watershed case study and others as models of collaborative strategies, site-specific ecological improvement approaches, and educational and fundraising opportunities (e.g., eco-tourism).

D. Implement RRWC priorities for salmonid species.

Rationale (Issues Addressed)

This potential action recognizes the people in the watershed as sources of valuable ideas, information and energy for the successful implementation and maintenance of restoration and management approaches. Developing strategic partnerships in the watershed may help to connect funding and tools with stewardship activities, increase coordination between different projects and programs, and enhance communication among agencies and property owners. In short, partnering may help to maximize resources required to recover native species in the watershed.

Potential Partners

NRCS, NMFS, EPA, NCRWQCB, DFG, RCDs, sub-watershed groups, RRWC

Related Activities, Projects and Programs

Bear Creek Watershed Case Study (see Appendix VI)

Relevant References

Russian River Basin Fisheries Restoration Plan – Review Draft (DFG)

Related Potential Action(s)

UR6, WS5, WQ6, RA1, RA3, RA5, PE5

Strategy III-D: Public Education and Outreach

Potential Action PE1: Present the Phase II Plan of Action (POA) as a tool to educate elected officials and decision-makers throughout all levels of government about the potential actions required to address the critical issues existing in the Russian River watershed.

Tasks may or may not include:

A. Use the California League of Cities conference as a forum for presenting the POA to increase support, participation, collaboration and resource (i.e., funding, volunteer time, etc.) opportunities among city officials and department staff.

B. Identify supporting documents and planning processes (e.g., DFG's *Russian River Basin Fisheries Restoration Plan* and Section 7 Consultation) to increase support and coordination of these efforts.

Rationale (Issues Addressed)

The development of the *POA* included discussions of critical issues, current restoration efforts and agency planning processes to identify potential solutions for recovering listed species and restoring the overall health of the watershed. The intent of this RRWC product is to provide community input for the development of the watershed management plan. Presenting this document to elected officials and decision-makers, including the issues, actions and opportunities for collaborations with resource agencies that it contains, may help to increase widespread participation in the development of a comprehensive management plan as well as enhance local practices.

Potential Partners

Mendocino County Board of Supervisors, Sonoma County Board of Supervisors, RCDs, cities, RRWC

Related Activities, Projects and Programs

Not available

Relevant References

Not available

Related Potential Action(s)

SH1, WQ6

Potential Action PE2: Develop a citizen recognition program that awards the "Top 10" private citizens, property owners and local businesses for exemplary behavior and practices that positively impact the health of the watershed.

Tasks may or may not include:

A. Identify case studies of model award programs to determine effective tools such as websites, ceremonies and financial prizes for implementation in the Russian River watershed.

B. Work with RCDs, property owners and local businesses to ensure the appropriate implementation of such a program.

Rationale (Issues Addressed)

The rationale behind Potential Action PE2 is to promote collaboration within the community, identify models for additional implementation, and diversify restoration and recovery approaches. Highlighting positive approaches may help to identify the interconnections between habitat and human activities and rewarding actions may promote stewardship.

Potential Partners

Mendocino County, Sonoma County, RCDs, cities, RRWC, local Chamber of Commerces

Related Activities, Projects and Programs

Not available

Relevant References

Not available

Related Potential Action(s)

SA2, PE3

Potential Action PE3: Promote awareness of watersheds, basins, and aquifers and their relationship to water flow, supply and quality.

Tasks may or may not include:

A. Develop accessible, easy-to-understand and bi-lingual educational programs and materials to increase awareness about the interrelated components and issues within the watershed. Include information regarding the following:

- Basic definitions of watershed elements, functions and structure,
- Water supply and demand including the impact of dams and dam operations (i.e., public and private),
- Water rights related to both groundwater and instream uses,
- Groundwater systems,
- Critical flow and usage patterns
- Future water needs, and
- Potential impacts of conservation and re-use measures.

B. Develop “step-by-step” descriptions about how landowners and homeowners can implement water conservation and re-use practices on private properties and in homes

and local businesses to minimize negative impacts on streams and river flows (e.g., flush toilets and reuse of grey water or strategies defining the proper use and maintenance of on-site septic systems).

C. Continue outreach and expand information presented at Water Rights Seminar.

D. Use RRIIS as a tool for coordinating program development efforts, disseminating materials to the public, and responding to new information (e.g., press releases and news articles) through an open and engaging online discussion forum.

Rationale (Issues Addressed)

This potential action seeks to improve the overall understanding of the complex yet interconnected watershed system to promote awareness and proactive protection measures. The goal is to minimize the need for regulatory approaches and foster an environment where people work together to ensure economic and ecological sustainability.

Potential Partners

USGS, Resources Agency, NCRWCB, SCWA, MCWA, RCDs, RRWC, 4SOS

Related Activities, Projects and Programs

Sonoma County Blue Circle (UCCE, FishNet 4C, West County Watersheds Network, 4SOS)

Relevant References

Not available

Related Potential Action(s)

SH4, UR2, WS1, WQ2, SA2, PE2

Potential Action PE6: Provide a watershed information center that serves as a central dispatch location providing press kits and public information materials for resource and community organizations to increase overall understanding and share information.

Tasks may or may not include:

A. Establish public computer or Internet workstation(s) to provide community members and organization representatives with access to RRIIS, other watershed group websites, resource agency information and computer modeling tools.

B. Consider existing and easily accessible locations for workstations, such as the public library.

C. Develop an informational brochure or pamphlet about RRIIS to inform resource managers and the public about the function and capabilities of the online data management tool.

D. Include video of the Water Rights Seminar as part of the information center resource library and identify venues and forums for showing the video.

Rationale (Issues Addressed)

Using available resources to promote public education and outreach is the focus of this potential action. Disseminating information via the Internet, community spaces and easy-to-understand materials, may increase overall awareness and promote action. A watershed information center that serves as an educational tool and utilizes existing technology may provide a low-cost mechanism for linking local efforts and key watershed decisions.

Potential Partners

NRCS, NCRWQCB, Mendocino County, Sonoma County, RCDs, cities, RRWC, HREC, CRP

Related Activities, Projects and Programs

Napa River Watershed Task Force (see Appendix VI)

Relevant References

RRIIS (CRP, HREC, MIG)

Related Potential Action (s)

PE3, PE4, PE5, PE6, PE7, PE8, PE9, DC6

ADDITIONAL POTENTIAL ACTIONS

Several potential actions were identified following the preliminary prioritization exercise on September 14, 2002. As a result, these potential actions were not reviewed nor discussed by the entire RRWC throughout the development of the *POA*. Additional potential actions are listed below to differentiate these potential actions from those in Chapter 4, which were the subject of in-depth discussion, and to retain these ideas for subsequent reviews and updates of this document. In addition, the potential actions identified during the panel session regarding long-term funding strategies, also held on September 14, 2002, are included in this appendix. The numbering for the potential actions below is continued from the potential actions for each strategy in Chapter 4.

SC6. Investigate methods and practices that help to shield or protect sensitive habitat areas from bright nighttime lights.

SH6. Reduce barriers to migration and spawning. Determine the feasibility of fishway bypasses and construction of off-stream storage to minimize reliance on in-stream storage.

WS6. Evaluate a moratorium on all further water diversions.

OS12. Consider revising the Rules of Operations to remove caucuses from the organizational structure.

LF7. Use the Plan of Action to apply for USACE budget appropriations for a Russian River Continuing Authority Program. Consider the San Francisco Bay Estuary Ecosystem Restoration as a model project that is seeking $50 million in funding to address restoration projects and studies.

LF8. Promote local landowner collaboration with RCDs and help private property owners' apply for the Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentive Program (WHIP) offered by the NRCS.

LF9. Apply for state and county grant programs to fund fishery restoration projects. Consider the Fishery Restoration Grants Program and California Riparian Habitat Conservation Program offered by DFG or grant opportunities offered by the Mendocino County Fish and Game Commission or Sonoma County Fish and Wildlife Advisory Board. Encourage public agencies, non-profits and private organizations/individuals to obtain associated permits, maintain fiscal accountability and apply methods and practices identified in the DFG Restoration Manual to ensure greater likelihood of funding.

LF10. Identify required resources for resource management agencies to continue programs and projects. For example, actual and proposed DFG staff cutbacks may negatively impact the ability of the DFG to provide the in-kind support to the RRWC that's necessary to receive federal matching funds.

LF11. Support proposed federal policy revisions that may increase the ability of the federal government to participate in local projects from 50% to 100%.

LF12. Build relationships with potential funding sources (e.g., the State Coastal Conservancy) through inviting their representative to participate in RRWC activities, panel discussions and meetings. Use the *POA* to help educate potential funding sources about the work of the Council.

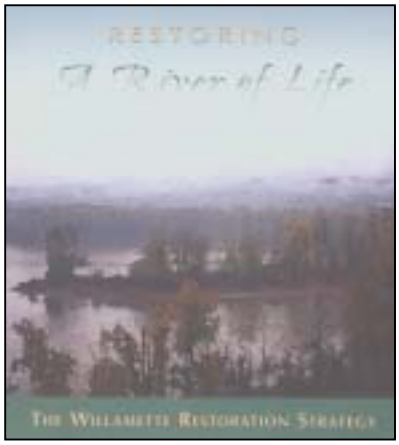
LF13. Explore County Fish and Game Commission funding for RRWC activities. This Commission receives fine violation monies and may be an untapped source of funds.

RELEVANT CASE STUDIES (USED FOR THE DEVELOPMENT OF THE ***POA***)

An in-depth review was completed for specific case studies selected by the Steering Committee to inform the development of the *POA*. Specifically, the case studies serve as practical models of watershed restoration planning processes in terms of the context, decision-making processes, stakeholder involvement, obstacles and outcomes. The case studies were presented to the RRWC early in the *POA* planning process to provide models of effective planning processes and restoration strategies for potential application in the Russian River watershed.

Three case studies were selected for in-depth review based on specific common issues and valuable lessons learned, geographic location and environmental conditions, stakeholder involvement, organizational structure, and type of restoration strategy. The case studies reviewed and presented were the *Willamette Restoration Strategy*, *Napa River Watershed Task Force*, and *Bear Creek Watershed Restoration Project*. Each of these case studies is described in this appendix.

THE WILLAMETTE RESTORATION STRATEGY



The Willamette River reached an alarming degree of deterioration that posed major threats to human health and levels of native species. A significant portion of the river and tributaries did not meet national water quality standards. The State Health Division was prompted to issue advisories regarding the risks of eating fish. The Willamette's chinook population suffered drastic decline.

Based on the recommendation of a special task force created to investigate the deteriorating condition of the Willamette River, a State of Oregon executive order was passed in October of 1998 initiating a unique approach to preserve and manage the watershed. As a result, the Willamette Restoration Initiative (WRI) was formed to develop a plan of action and manage its implementation. Funding was provided through the state legislature and five federal agencies. The organizational framework provided for a board of directors and key permanent staff members. The Initiative was charged with accomplishing several objectives:

- Protect and restore fish and wildlife habitat
- Increase populations of declining species
- Enhance water quality
- Properly manage floodplains

The result of the WRI's work toward developing a holistic and integrated action plan was the *Willamette Restoration Strategy*. The *Strategy* was focused on four key areas including Clean Water, Water Quantities, Habitat and Hydrology, and Institutions and Policies. For each component, critical actions and integrated state and federal agency measures were developed. The document was organized into the following structure:

- Profile of the Willamette Basin
- Working for the Basin's Best Interests
- Measuring Restoration Results
- Four Restoration Focus Areas
- Investing in the Future
- Recommended Actions

To achieve a high level of precision in the implementation of the recommended actions, the *Strategy* carefully delineated timetables, responsible parties, individual tasks, estimated costs, funding sponsors, success measures, geographic scope, potential obstacles, and required regulations. The *Strategy* made four practical recommendations that encompassed funding, implementation strategies, tracking systems, evaluation and refinement. The project has garnered more than $1 million for implementation and community outreach expenses. In 1998, the Willamette was designated an American Heritage River.

The WRI tapped into a statewide program known as the Oregon Plan. Following legislative and gubernatorial approval in February 2001, the *Strategy* became a supplement to the Oregon Plan, which was predicated on a participatory, wide-scale approach to natural resource management. The *Strategy* also relied on grass-roots efforts, voluntary measures, and better enforcement of existing regulations to restore native fish population to sustainable levels. Therefore, a key strategy of the WRI was to identify and leverage existing regulatory and legislative protection to maximize the efficacy of the recommended actions in the *Strategy*.

Several key accomplishments noted for the project to date include the widespread involvement of local communities in voicing their needs and values, identification of government resources and complementary regulatory policy, and resources gained for project implementation. Some of the lessons learned through the process were specific to the overly large board of directors and approaches compromised by opportunism. The process itself had the added value of bringing good exposure to the issue. The bottom-up, community driven approach was appropriate and beneficial. Despite some of the setbacks encountered, the effort was seen as productive and worthwhile.

For additional information about the Willamette Restoration Initiative or the *Willamette Restoration Strategy*, the following website can be used: <www.oregonwri.org>.

NAPA RIVER WATERSHED TASK FORCE

The Napa River also faced a severe threat of decline or extinction of fish and other aquatic species. In response to the crisis, the Napa River Task Force was formed in December 1998 to develop a strategy that would mitigate and reverse the environmental deterioration. The Task Force was given a mandate to "examine a variety of short-term and longer-term conservation strategies related to sustainable land use, protection of natural resources and habitats, and the critical role of agriculture in the regional economy and quality of life." Key participants in the process included the project manager from the Napa County Conservation, Development and Planning Department (CDP), technical advisors, facilitation and document production consultants, and a Technical Review Team.

A series of meetings were held to disseminate and exchange information, as well as to develop goals, strategies to achieve the identified goals, and specific recommendations for implementing the strategies. The four strategy areas included:

- Compliance with conservation ordinance
- Improvements to conservation regulations
- Watershed Information Center
- Watershed Protection and Restoration Conservancy

A major information-gathering project was initiated in order to begin to understand and define the scope of the issues and to inform future watershed management decisions. Research was conducted on a variety of issues specific to the wine industry and urbanization trends, soil erosion, state/federal roles, and ecological protection/restoration.

The Phase I component of the Napa River Task Force program achieved several important successes. A key administrative citation ordinance was adopted. A staff member was hired at the District Attorney's office and an inspector at the CDP Department. The Task Force also created a conservation regulation "hotline." Overall, stakeholders noted an enhanced County & RCD collaboration.

Phase II of the project focused on a longer-term set of issues and objectives. The principal of these included:

- Improving water quality and removing the Napa River from the "impaired" list
- Improving habitat preservation, while maintaining agricultural economy

- Ensuring that all land disturbance activities were incorporated into regulatory and institutional approaches

The final report presented issues, recommendations and rationale on conservation regulations. It discussed the roles, funding opportunities, mission and suggested structure of the Watershed Information Center and Napa Watershed Conservancy as well as outlining key action steps.

The conservation regulations covered a range of areas that included:

- Stream Definitions
- Stream Setbacks
- Off-Site Hydrological Impacts
- Sedimentation in Water Supply Watersheds
- Biological Analysis & Resource Protection
- Oak Tree Preservation
- Fencing
- One Acre Exemption
- Timber Harvesting Plan (THP) and Timber Conversion Plan (TCP) Exemption
- Erosion Control Plan (ECP) Requirements Relative to Slope Criteria
- Watershed Protection/Restoration Fees
- Watershed Protection Incentives

Some of the key accomplishments noted for Phase II were: 1) the formation of an implementation committee; 2) the development of full-scale revisions; and 3) performance of an environmental review.

Several key lessons can be surmised from the Napa River project that may be applicable to the other planning processes. The process was lengthy and time consuming in many aspects. Different stakeholders and groups approached the project with different perceptions of the problem. Practical assignments of responsibility and realistic timelines proved to be problematic. Securing agency support and commitments are critical for effective implementation.

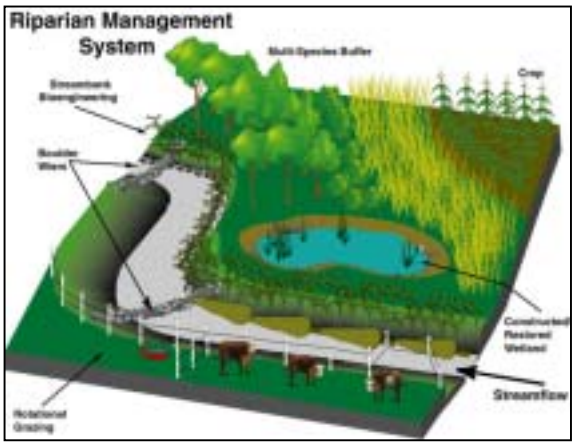
For additional information about the Napa River Watershed Task Force, visit the Napa County CDP Department website at: <www.co.napa.ca.us >.

BEAR CREEK WATERSHED RESTORATION PROJECT

This management project dealt with a geographic area cutting through the Western Corn Belt in a two-county jurisdiction in Iowa. The watershed faced an onslaught of threats to water quality and flow, including erosion and agricultural chemicals, flooding, and animal effluents. A 60-member Agroecology Issue Team was formed to develop restoration measures that would address the critical issues in the Bear Creek watershed. The team represented a partnership between the academic community and landowners. The team was charged with the following objectives:

- Develop flexible riparian management systems that are acceptable to farmers/landowners and that embrace landscape sustainability and diversity.
- Conduct on-farm research to understand the functions of riparian management systems.

The Team worked together to develop a system that would help to restore an intensively modified agricultural watershed, build upon existing efforts, and include broad applicability inside and outside Bear Creek watershed. The result of the Team's efforts was the creation of a Riparian Management System (RiMS) that includes many tools to rebuild and maintain the integrity of a watershed such as the use of buffer zones, constructed wetlands and rotational grazing practices.



This diagram highlights the basic yet flexible components of the Riparian Management System (RiMS) developed to resolve erosion, flooding, animal effluent, and invasive species problems facing many farmers in Bear Creek County, Iowa.

To enhance the feasibility of implementing RiMS, the Team tapped into a broader Conservation Reserve Program established by the 1985 Food Security Act. The goal of the Program is to mitigate erosion, soil loss and the destruction of species' habitats in cropland areas. The Program allows property owners to retire highly erodible or environmentally sensitive cropland from production for 10-15 years for an annual per acre rent plus cost to establish permanent cover.

Through this program, RiMS has been implemented as demonstration sites on approximately eight private properties and planned for 3 additional properties in the Bear Creek watershed. As a result, 66-108 feet of riparian buffer strips exist throughout the watershed today. A number of environmental improvements within the watershed were attributed to the project's impact such as:

- Reduction of bare soil areas
- Decrease in bank erosion

- Decline of sediment and nitrogen inputs
- Increase of vertebrates and shade cover
- Rebound of wildlife species
- Decrease in uplands erosion

As a result, the Bear Creek Restoration project was the recipient of several environmental awards, including designations as a National Showcase Watershed (1998) and NRCS National Restoration Site (2002). The Agroecology Issue Team of the Leopold Center for Sustainable Agriculture at Iowa State University offers tours of its demonstration areas allowing resource managers and property owners opportunities to learn more about RiMS and its application.

For additional information about the Agroecology Issue Team or the Bear Creek Watershed Restoration Project, the following website can be used: < www.buffer.forestry.iastate.edu >.

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LIST OF ACRONYMS & WEBSITES

4SOS	For Sake of the Salmon < www.4sos.org>
ARPA	Archeological Resource Protection Act <www2.cr.nps.gov/laws/archprotect.htm>
BA	Biological Assessment
BIA	Bureau of Indian Affairs <www.doi.gov/bureau-indian-affairs.html>
BLM	Bureau of Land Management <www.blm.gov/nhp>
BMPs	Best Management Practices
BO	Biological Opinion
BOR	Bureau of Reclamation <www.usbr.gov>
CAA	Clean Air Act <www.epa.gov/oar/oaq_caa.html>
CAC	Mendocino General Plan Update Citizen Advisory Committee
Cal/EPA	California Environmental Protection Agency <www.calepa.ca.gov>
CARCD	California Association of Resource Conservation Districts <www.carcd.org>
CCC	California Coastal Commission <www.coastal.ca.gov>
CCC	California Conservation Corps < www.ccc.ca.gov/cccweb/index.htm>
CDF	California Department of Forestry and Fire Protection <www.fire.ca.gov>
CDP	Napa County Conservation, Development and Planning Department <www.co.napa.ca.us >.
CEQA	California Environmental Quality Act <ceres.ca.gov/ceqa>
CESA	California Endangered Species Act <ceres.ca.gov/topic/env_law/cesa/stat>
CGS	California Geological Survey <www.consrv.ca.gov/CGS>
CIP	Capital Improvement Plan
CREP	Conservation Reserve Enhancement Program <www.fsa.usda.gov/dafp/cepd/crep.htm>
CRMP	Coordinated Resources Management and Planning < www.cacrmp.org>
CRP	Circuit Rider Productions, Inc. <www.crpinc.org>
CWA	Clean Water Act <www.epa.gov/region5/water/cwa.htm>
DFG	California Department of Fish and Game <www.dfg.ca.gov>
DWR	California Department of Water Resources <wwwdwr.water.ca.gov>
ECP	Erosion Control Plan

EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency <www.epa.gov>
EQIP	Environmental Quality Incentives Program <www.nrcs.usda.gov/programs/eqip>
ESA	Endangered Species Act <endangered.fws.gov/esa.html>
ESU	Ecologically Significant Unit
FERC	Federal Energy Regulatory Commission <www.ferc.gov>
FGC	California Fish and Game Commission <www.dfg.ca.gov/fg_comm.>
FSA	Farm Service Agency <www.fsa.usda.gov>
GIS	Geographic Information System
Gold Ridge RCD	Gold Ridge Resource Conservation District <sonomamarinrcds.org/district-gr>
HREC	University of California, Hopland Research and Extension Center <danrrec.ucdavis.edu/hopland/home_page.html>
IRWP	Incremental Recycled Water Program <www.recycledwaterprogram.com>
KRIS	North Bay Klamath Resource Information System <www.krisweb.com>
LCP	Local Coastal Plan
MCIWP	Mendocino County Inland Water and Power
MCRRFC&WCID	Mendocino County Russian River Flood Control and Water Conservation Improvement District
MCWA	Mendocino County Water Agency <www.co.mendocino.ca.us/direct.htm>
Mendocino County RCD	Mendocino County Resource Conservation District <mrcd.ca.nacdnet.org>
MIG	Moore Iacofano Goltsman, Inc. <www.migcom.com>
MOU	Memorandum of Understanding
NAGPRA	Native American Graves Protection and Repatriation Act <www.cr.nps.gov/nagpra>
NCRWQCB	North Coast Regional Water Quality Control Board <www.swrcb.ca.gov/rwqcb1>
NCWAP	North Coast Watershed Assessment Program <www.ncwatershed.ca.gov>
NEPA	National Environmental Policy Act <ceq.eh.doe.gov/nepa/nepanet.htm>
NGA	Natural Gas Act <www.ferc.fed.us/informational/acts/nga.htm>

NGPA	Natural Gas Policy Act <www.ferc.fed.us/informational/acts/ngpa.htm>
NMFS	National Marine Fisheries Service <www.nmfs.noaa.gov>
NOAA	National Oceanic and Atmospheric Association <www.noaa.gov>
NPDES	National Pollutant Discharge Elimination System <cfpub.epa.gov/npdes>
NRCS	Natural Resources Conservation Service <www.nrcs.usda.gov>
NTMP	Nonindustrial Timber Management Plan <www.fire.ca.gov/ResourceManagement/HarvestingForms.asp>
PG&E	Pacific Gas and Electric <www.pge.com>
POA	Plan of Action for the Phase II Development of the Russian River Watershed Management Plan <www.rrwc.net/poa.shtml>
PSP	Russian River Watershed Management and Protection Study Project Study Plan < www.spn.usace.army.mil/russian/psp1103.pdf>
PVID	Potter Valley Irrigation District
Resources Agency	California Resources Agency < www.resources.ca.gov>
RCD	Resource Conservation District(s) <www.nrcs.usda.gov/partners/districts.html>
RiMS	Riparian Management System < www.buffer.forestry.iastate.edu >
RHA	Rivers and Harbors Act <ww.sac.usace.army.mil/permits/sec10.html>
RRIIS	Russian River Watershed Interactive Information System <rriis.migcom.com> *(Note: this website is under development and the URL address may change upon its release.)*
RRGIS	Russian River Geographic Information System
RRWC	Russian River Watershed Council <www.rrwc.net>
SCC	California State Coastal Conservancy <www.coastalconservancy.ca.gov>
SCWA	Sonoma County Water Agency <www.scwa.ca.gov>
Sotoyome RCD	Sotoyome Resource Conservation District <sonomamarinrcds.org/district-ssr>
SWRCB	State Water Resources Control Board <www.swrcb.ca.gov>
TCP	Timber Conversion Plan
THP	Timber Harvesting Plan
TMDL	Total Maximum Daily Load <www.swrcb.ca.gov/rwqcb1/Program_Information/tmdl/tmdlprogram.html>
TRT	NMFS' Recovery Planning Process (for West Coast Salmon) Technical Recovery Team
UCCE	University of California Cooperative Extension <www.ucanr.org/ce.cfm >

USACE	U.S. Army Corps of Engineers <www.usace.army.mil>
USFS	U.S. Forest Service <www.fs.fed.us>
USFWS	U.S. Fish and Wildlife Service <www.fws.gov>
WCB	Wildlife Conservation Board <www.dfg.ca.gov/wcb>
WHIP	Wildlife Habitat Incentives Program <www.nrcs.usda.gov/programs/whip/>
WIAM	Watershed Information Assessment and Monitoring Workgroup of the Russian River Watershed Council <www.rrwc.net>
WRI	Willamette Restoration Initiative <www.oregonwri.org>
WSTSP	Water Supply and Transmission System Project